

Vacuum Ultraviolet Light Source Developed

Two months ago, a report by a national committee of laser researchers called for development of new pulsed sources of coherent radiation in the ultraviolet and "vacuum" ultraviolet part of the electromagnetic spectrum.

The study lamented "glaring gaps" in available, tunable sources in the very short wavelength range from 100 to 400 nanometres (nm), or billionths of a metre. It pointed to the need for such sources for laser chemistry, materials processing, medicine, and fundamental areas such as spectroscopy.

The timing is just coincidence, but Arlee Smith of Advanced Laser & Optoelectronic Div. 1124 and Joe Alford of Laser and Plasma-Processing Div. 1128 have just announced a new tunable light source that exactly fills one of those key "gaps."

The new laser-like device generates tunable, highly efficient, coherent ultraviolet radiation at a wavelength of 130 nm. It is tunable from 120 to 140 nm. Perhaps most important, it's nearly a thousand-fold more efficient than previous light sources operating in this part of the spectrum.

And the device has generated a world record amount of energy at this wavelength — 1.1 millijoules. Since a joule is the amount of energy in 1 watt acting for 1 second, 0.001 joule may not sound like much, but this energy is delivered in nanosecond pulses at megawatt bursts of power. For some laboratory applications, only 1 microjoule is considered a hefty dose. Since the device uses parallel beams, it is area-scalable to far more energetic levels.

The achievement, which took several years of research by Arlee and Joe, draws on theoretical models by Ron Hadley (1124). The laser itself was demonstrated jointly by Sandia and Spectra Technologies, Inc., whose research group built the laser, under a Sandia contract, at its Bellevue (Wash.) laboratory.

"There are probably very wide applications for these types of sources," says Jim Gerardo, manager of Laser and Chemical Physics Research Department 1120. "It's very timely work."

"Vacuum" Ultraviolet Explained

Ultraviolet radiation with a wavelength of less than 200 nm is called vacuum ultraviolet (VUV) because it is absorbed by air and other gases. It therefore must generally be transmitted in a vacuum, that is, an evacuated apparatus. It is sometimes called extreme ultraviolet radiation.

("Wavelength" refers to the distance between one peak or crest of a wave of light, heat, or other measure of electromagnetic energy. Laser light obtains its special properties because it consists of only one wavelength, and its electromagnetic waves are all in step with each other, reinforcing each other.)

The new source may be useful in SDI applications because its 130-nm wavelength is an oxygen resonance wavelength. That is, a light source of 1-joule energy operating at this wavelength would excite oxygen atoms in the atmosphere. This could be used to produce ionization channels of interest to the SDI program.

But tunable, bright laser-like sources capable of operating in this area of the spectrum might also be useful in laser spectroscopy — to study basic chemical processes. Or in photolithography — to make microelectronic circuits of submicron line widths (see "Photolithography" story). Or as a diagnostic tool — to detect oxygen impurities in the plasma inside tokamak fusion machines. (Those intrigued by such possibilities should call Arlee.)

From 0.01 to 6 Percent Efficiency

Arlee and Joe were able to maximize the conversion efficiency of an energy-scalable VUV source by using a technique called sum-frequency mixing. In this method, light from three lasers that emit different frequencies of visible and ultraviolet radiation is combined. The mixed light is then passed through mercury gas to create VUV radiation of the desired frequency. The output frequency is the sum of the three input frequencies.



Using this method, Arlee and his group, working with Spectra Technology scientists, have achieved efficiencies of 6 percent, in contrast to the 0.01 percent typical of earlier methods.

The mixing process involves no "population inversion" of atoms and no stimulated emission, so the result is not literally a laser. (The word "laser," after all, is an acronym for Light Amplification by

Stimulated Emission of Radiation.) But it acts like one. Says Arlee, "the light has the same coherence and tunability as the pump lasers."

The nearly 1 millijoule energy achieved so far is released in short pulses of about one nanosecond, resulting in powers of about 1 megawatt.

Development of the new VUV source was made

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LAB NEWS

VOL. 40, NO. 12SANDIA NATIONAL LABORATORIESJUNE 17, 1988

Operations Began in February

Waste Management Facility Reflects Labs' Concern for Protecting Environment

A new hazardous waste management facility that's used for packaging and storing the tons of chemical wastes generated each year by SNLA organizations began operating last February at a site south of Area I.

The two-building facility "reflects Sandia's ongoing concern for protecting the environment," says Gordon Smith, supervisor of Environmental Programs Div. 3314.

"An R&D lab such as Sandia generates a variety of chemical wastes," Gordon continues. "It's important to segregate them according to chemical class and to package them properly. Ultimately, we ship them to a disposal or recycling facility authorized by the EPA [Environmental Protection Agency]. Until that occurs, it's our responsibility to handle and store them safely according to EPA regulations." (However, according to Gordon, Sandia continues to maintain some potential liability for environmental damage that occurs if the waste is improperly treated or disposed of.)

"The new facility provides an efficient setup for waste handling, as well as a storage area that's protected from the weather," says Gordon.

(Before the facility began operating, chemical wastes were sealed in 55-gallon drums, then stored on pallets at a deactivated landfill site in the southeast corner of Area III for later pickup by licensed contractors.)

One building at the new facility contains a number of bays, into which chemical wastes are sorted according to their "compatibility." Then the wastes



CHEMICAL WASTES, separated in bays by category, are placed on grates over open concrete sumps. Therefore, if a container leaks, the spillage is contained within the facility.

are repackaged in drums that are stored in the second building until they're shipped to a disposal facility.

Safety Features

"Safety was a primary concern when we designed the facility," says Gordon. "For instance, both buildings have overhead sprinkler systems that would activate in case of a fire. And the waste — separated in bays by category — is placed on grates over open concrete sumps. If there's a container leak, the spillage would be contained within the facility, rather than sinking into the ground."

(Continued on Page Four)

Antojitos

Blood, Toil, Tears, and Lots of Sweat — Sandia Livermore, along with much of the rest of the Bay Area, gets its water from the Hetch-Hetchy reservoir near Yosemite. And, like other subscribers to that water system, SNLL has been asked to reduce its water consumption by 25 percent. That means, among other things, "raising building temperatures to reduce cooling load." By extrapolation, then, Livermore Sandians are going to be 25 percent warmer this summer than last.

Let's see, 25 percent of 70° F is 17.5, so it'll be 87.5° — pretty bad. Let's do it in Celsius: Ah, 26° — much better. (Aren't statistics wonderful?) Whichever, I predict a decrease in neckties and an increase in fans, antiperspirant, and visits to the Computer Center.

Aren't Statistics Wonderful, Continued — "The Mississippi between Cairo [Ill.] and New Orleans was 1215 miles long 176 years ago. It was 1180 after the cut-off of 1722. Its length is 973 miles at present.

"Now, if I wanted to be one of those ponderous scientific people, and 'let on' to prove . . . what will occur in the far future by what has occurred in late years, what an opportunity is here! In the space of 176 years, the lower Mississippi has shortened itself 242 miles. That is an average of a trifle over one mile and a third per year. Therefore, any calm person . . . can see that 742 years from now the lower Mississippi will be only a mile and three-quarters long, and Cairo and New Orleans will have joined their streets together, and be plodding comfortably along under a single mayor and a mutual board of aldermen.

"There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact."

—Mark Twain, *Life on the Mississippi*

Green Side Up! — It's the time of year again when the cardboard sun screens blossom in the windshields of parked (I hope) cars. And a few of our folk, like the sod-laying Aggies who had to be reminded of the recipe, persist in getting the wrong side out. John Williams (3734) suggests using the screens as a pass/fail intelligence test for prospective employees. I'd go further: When you see an EMERGENCY - CALL POLICE plea in the windshield of a car in a RESERVED parking slot, I suggest that you note the Base sticker number and call our police (that is, Security) so the well-being of the DM, Director, or VP can be professionally ascertained. At Sandia, we care!

"Jet Loses Power, Lands at WWII Airstrip — A Taca International Airliner making an approach in nasty weather Tuesday lost power in both engines and made an emergency landing at an abandoned World War II airstrip six miles short of the [New Orleans] runway, authorities said." Asks Bob Manhart (3151), "Do you know what it means, to miss New Orleans?"

More on SAND Report Sentences — Anne Poore's (3151) favorite comes from a caption for a figure summarizing annual energy flows as calculated by a computer program (which shall remain nameless here). The final sentence in the caption: "Not all the Significant Digits are Significant."

De gota a gota se agota la mar. (Drop by drop the ocean could dry up.)

Events Calendar

June 17-18 — "Painting Churches," drama about an artist's struggling relationship with her aging parents; 8 p.m., Second Story Arts Center, Albuquerque Little Theatre, 242-4750.

June 17-19 — "Sweet Charity," by Neil Simon, Albuquerque Civic Light Opera Association presentation of story about ill-fated dance-hall hostess looking for love in all the wrong places; 8:15 p.m. Fri. & Sat., 2:15 p.m. Sun.; Popejoy Hall, 345-6577 or 277-2131.

June 17-19 — "A Girl's Guide to Chaos," adult comedy by Cynthia Heimel about four women whose social situations are far from their expectations; 8 p.m. Fri.-Sat., 6 p.m. Sun.; Vortex Theatre, 247-8600.

June 17-July 17 — "Mexico Nueve: A Suite of Lithographs," exhibit of 18 lithographs pulled at Tamarind Institute, featuring original prints by contemporary Mexican artists; regular museum hours, Van Deren Coke Gallery, UNM Art Museum, 277-4001.

June 17-July 22 — Annual Summer Raymond Jonson Exhibition, selected works from the Jonson Reserve and Estate collections featuring abstract landscapes; regular museum hours, Jonson Gallery (UNM), 277-4001.

June 17-July 24 — "New Traditions: Thirteen Hispanic Photographers," exhibit of works by New York-based photographers from Chile, Cuba, Colombia, Venezuela, Spain, Brazil, and North America; regular museum hours, upper gallery, UNM Art Museum, 277-4001.

June 17-Aug. 31 — "Dinosaurs in Action," new exhibit of four mechanical dinosaurs: adult and juvenile triceratops, brontosaurus, and tyrannosaurus; 10 a.m.-5 p.m., New Mexico Museum of Natural History, 841-1374.

June 17-18 — Soweto, South Africa, commemoration: featuring films ("Six Days in Soweto" and "Bound to Strike Back"), music, art, and poetry; 7:30 p.m., South Broadway Cultural Center, free, 848-1320.

June 17-July 4 — Third Annual Art Windows on Route 66: juried exhibition of storefront art installations in the Nob Hill District (Girard to Washington on Central Ave.); free, 251-2047.

June 18 — Summerfest '88: Juneteenth and Caribbean Night, food and entertainment; 5-10 p.m., Civic Plaza, 768-3490.

June 18 — 10th Annual Watermelon Evening: silent auction, children's games, food, and entertainment by magician Richard Searle, guitarist Bonnie Bluhm, and the Watermelon Mountain Jug Band; 4-10 p.m., First Unitarian Church (3701 Carlisle NE), free, 884-2999.

June 19 — Father's Day Concert, benefit sponsored by the Friends of the Corrales Library, musical variety by various performers, refreshments; noon to 7 p.m., Corrales Village Park, 898-3798.

June 19 — Arts in the Parks: Father's Day festivities — music, magicians, and dancers; 1:30-4:30 p.m., Hyder Park (Richmond & Pershing SE), free, 764-1525.

June 24 — San Juan Feast Day: Buffalo and Comanche Dances at San Juan Pueblo, Corn Dance at Taos Pueblo; call for times, 843-7270.

June 24 — "Musica y Danza Folklorica del Norte," music and dance from northern New Mexico communities; 7:30 p.m., KiMo Theatre, 848-1374.

June 24-26 — New Mexico Arts and Crafts Fair, featuring calligraphy, ceramics, jewelry, leather work, macrame, drawings, paintings, sculpture, stitchery, weaving, and woodworking displays; entertainment and demonstrations; 10 a.m.-10 p.m. Fri. & Sat., 10 a.m.-6 p.m. Sun.; NM State Fairgrounds, 884-9043 Mon. or Thurs. mornings.

June 29 — San Pedro Feast Day: Corn Dances at San Felipe, Santa Ana, and Santo Domingo Pueblos; call for times, 843-7270.

July 1-24 — "Born Yesterday," classic play by Garson Kanin about a young woman's rebellion against a domineering man and his political corruption; 8 p.m. Fri. & Sat., 6 p.m. Sun.; Vortex Theatre, 247-8600.

Congratulations

To Debi and Steve (5262) Scott, a daughter, Caitlin Jennifer, April 7.

To Mary and Nate (1511) Bixler, a son, Daniel James, May 19.

To Sherrye (2500) and John (5214) Lavasek, a daughter, Lori Ann, May 20.

To Bernadette and Tom (7265) Brown, a son, Travis Garrett, May 26.

To Cecelia Zuni and John Lujan (7813), married in Isleta Pueblo, May 28.

To Alice (2635) and James Starcher, a son, Maxwell Charles William, May 31.

To Barbara and Dan (7521) Wahl, twin daughters, Chelsea Marie and Courtney Elyse, May 31.

To Lee Ann (122) and Tom Powell, a daughter, Heather Marie, June 4.

To Betty Boynton and Ken Campbell (7541), married in Las Vegas, Nev., June 4.

The Right Choice?



The Nebraska State Penitentiary solicits free books from Kimberly Press, whose only volume, *Conquering the Corporate Career*, opens with a chapter titled "Break Out of Your Cell."

Selwyn Feinstein, *Wall Street Journal*

LAB NEWS

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Going Strong after 40 Years

Frank Duggin (8534) spends more money than all the other 1100 Livermore Sandians combined. Last year he (and his Purchasing Division) bought more than \$94 million-worth of goods and services. Of course, he's had a lot of practice at spending money — he's been at it for 40 years this month!

Frank recently reminisced about his Sandia career. He moved to Albuquerque as a boy back in 1936, went through school, did a stint in the Navy, studied business at UNM, and then, after getting married, went to work at the new place in town — Sandia — on June 7, 1948.

13: A Lucky Number

Maybe he should have waited until the 13th, because he considers that number to be his luckiest. He got married on May 13th, his wife's birthday is June 13th, he went overseas on June 13th, and he returned from his tour of duty with the Navy a few years later on May 13th.

However, even without the benefit of the lucky number, Frank's career at Sandia has been a gratifying one.

His first job at Sandia was as a receiving clerk in the Field Test organization. Later, he became an expeditor, next an order analyst, then (in 1953) a purchase analyst. He's been involved with purchasing activities ever since.

"I took the opportunity to switch jobs as they became available," says Frank. "I felt that each move would give me an opportunity to learn more. The people I worked for always encouraged me; maybe that's why I was the first Albuquerque employee without a degree to be promoted to MAS [Member of Administrative Staff]."

Frank became a division supervisor in 1983, and a year later accepted a "temporary" assignment in Livermore to head Purchasing. He's been there since — and will stay until the end of this year, when he'll return to Albuquerque.

Frank says there were four senior buyers, four buyers, and a group of 22 expeditors during his early days in Purchasing. "You placed a contract and never saw the order again, because you let the expeditor take it from there," he recalls. "Then a change in

company philosophy eliminated the expeditor positions and gave buyers responsibility for following the contract from beginning to end.

"More recently, we've switched to departmental buying — a good move that gives us closer contact with the technical folks," Frank continues. "We get to know them better, and I believe the set-up results in more efficient procedures all the way around."

The introduction of computers revolutionized the work of Frank's division. "We used to type every contract we issued, and retype it with each change," he says. "Now we just enter it in the computer at the beginning and make the changes as they come along. And we're able to print out new versions with the stroke of a key."

An Attempt at Ship-Buying

The most unusual purchase of his career? "An attempted purchase: trying to buy a battleship," Frank says, without hesitation. "A retired admiral had joined Sandia and wanted to put us [Purchasing] through the exercise of acquiring a Navy ship. We didn't buy the ship. But we *have* bought airplanes, missiles, weather balloons, boxcars full of steel, and parachutes more than once."

Frank's biggest purchase occurred about 15 years ago, when he ordered some very sophisticated tracking devices for the Sandia office at Nevada Test Site at a cost of \$10 million — 20 percent lower than the Air Force was able to obtain for similar equipment about the same time.

Frank appreciates his staff and its ability to deal with the day-to-day stress that's part of the job. He says, "It takes a certain type of person to work in Purchasing: someone who can take criticism, serve



FRANK DUGGIN (8534) — 40 years of practice in spending money.

as a sounding board for customers, and manage to smile no matter what the hassles or how busy.

"I think Sandia is tremendous," Frank concludes. "I've met a bunch of good people who are easy to get along with. Sandia has so many good things going for it. Any federal agency that wants a quality job done in a timely fashion, and with prudent use of its money, would be wise to turn to the Labs."

He and his wife Patty plan to return to their Albuquerque home this December. When Frank decides to retire, he and Patty intend to spend the first six months motoring around the US.



**SANDIA
LIVERMORE NEWS**

VOL. 40, NO. 12 SANDIA NATIONAL LABORATORIES JUNE 17, 1988

Working Women Play Too

Working women appear to do a lot with their leisure time — but watch less television. Women who work full time have their television on only 28 hours a week, compared with 37.5 hours for women who don't work outside the home, according to a study by Young & Rubicam. . . Working women were also found to read more newspapers and magazines as well as spend more time at the movies. Additionally, they were more likely to engage in physical-fitness activities, swim, garden, bicycle, go to the theater or a concert, and attend adult-education classes.

Wall Street Journal



SOMETIME in the next three years, each Livermore Sandian will be invited to join TLC — and become an ardent aerobist.

Take Note

Sandia Livermore VP John Crawford (8000) recently hosted Livermore city officials at a luncheon and discussion on community concerns. Attending were Livermore Mayor Dale Turner, City Manager Lee Horner, Councilmember Judy Bartoli, Ron Detry (8200), Rick Wayne (8400), and Paul Brewer (8500). Henry Hanser (8440) briefed the visitors on Sandia's

tritium experiments and safety procedures before they toured the Tritium Research Facility. John says Sandia plans to hold quarterly meetings with local officials to update them on Labs activities.

Peter Mattern (8300) is one of 12 people who've completed the Livermore Chamber of Commerce's first "Leadership Livermore" class, a nine-month program that focuses on issues related to all aspects of local and regional government, community structures, and educational and civic organizations. "The class was outstanding — a unique opportunity to learn how our local, county, and state systems work," says Peter. "There's probably no other way to gain these kinds of insights."

Gary Drummond (8301) recently received one of the two Outstanding Community Service Awards presented annually by the Livermore Rotary Club. Gary was recognized for his years of work in local historic preservation (including the publication of two books), and for creating downtown walking tours — which he voluntarily conducts — of historic houses and business buildings.

Congratulations

To Debbie (8522) and Rick Randich, twin sons, Brian and Brett, May 5.

To Lori (8231) and Mark Joseph, a son, Matthew William, May 31.

To Annie Webb (8281) and Donald Clark, married in Livermore, June 4.

PHYLLIS PEI AND RON HAMILTON (both 3314) inventory a bin of storage drums containing chromic acid at the hazardous waste management facility. Phyllis and Ron coordinate the Labs' waste management program.



(Continued from Page One)

Waste Management

Also, the building used for sorting and repackaging has both an exhaust ventilation system to carry fumes away from workers and a bench-test facility used to determine waste content if there's a question about the chemicals it contains. The facility's location also shortens transportation time, since it's closer to the labs and shops where most waste is generated.

Waste gets picked up on a once-a-week basis at various SNLA collection points; a contractor, IT Corp., handles the pickup and transfer to the waste management facility. Phyllis Pei and Ron Hamilton (both 3314) coordinate the waste management program; Ron oversees contractor work at the new facility. (Line organizations that generate chemical waste send a pickup-request form to Div. 3314 when they have material for collection on the weekly run.)

"The plating and plastics development labs generate the largest quantities of hazardous chemical waste," notes Gordon. "A larger variety — but smaller amount — comes from the research labs." Liquid chemical waste volume is about seven times that of solid waste, according to Gordon. Specifically, the hazardous waste program handled some 11 tons of solid waste and 77 tons of liquid waste during FY87.

"Waste disposal is relatively expensive," says Gordon. "Currently, the cost is about \$700 a drum

— and rising. We are trying to hold down costs as best we can; for example, we generally store waste drums until we've accumulated enough [80 drums] for a full truckload." (New Mexico has no so-called "Class 1" disposal facilities — EPA-approved commercial disposal facilities — so all of SNLA's chemical wastes must be shipped out of state for disposal.)

Disposal Is Expensive

"We're also trying to create some economic awareness here on the home front," Gordon continues. "For instance, chemical users should know that, though it might appear to be more economical to order more material than needed and take advantage of a discount, it may actually cost more when disposal costs are factored in. Also, we encourage people to investigate the use of substitute materials that do not require hazardous waste disposal techniques."

Plans are in the works for a second packaging/storing facility in Area III for handling both radioactive and hazardous waste. Construction is scheduled to begin in September, with a projected completion date of June 1989.

A final message from Gordon: "Our business is ensuring protection of the environment surrounding Sandia. I urge any employee who detects a Labs operation that might adversely impact the environment to give me a call on 6-2655. Someone from the division will promptly review the operation and determine whether additional environmental protection measures are needed." ●PW

Spare Your Wastebasket

If you're about to retire or leave the Labs,
don't toss your historically valuable records.

Corporate Historian Necah Furman (3151A) is looking for
audiotapes, records, and photos.

Call her on 6-9619.

(Continued from Page One)

VUV Source

possible by a series of basic studies at Sandia that measured the atomic characteristics of mercury carefully and systematically. In these studies, Arlee and Joe made the most accurate measurements yet of the strengths of transitions between atomic levels of mercury.

Mercury vapor is the mixing medium for the VUV source. This gas is an efficient conversion medium so it is well matched to the needs of such a device. Arlee and Joe's studies enabled them to identify the best way to optimize the mixing process to achieve high efficiencies, or high output energies.

Using these pioneering measurements and Ron Hadley's theoretical models that predicted high efficiencies, Arlee and Joe then designed a tunable and efficient VUV source.

"This is an excellent example of how basic research in the proper setting can lead to an important technological accomplishment," says Fred Vook, Director of Solid State Sciences 1100.

●KFrazier:3161

Fashions in the Fast Lane



Fashion Systems Corp. in New York says it is negotiating with some major US retailers to install computerized Magic Mirrors that allow people to "try on" as many as 10 outfits in 60 seconds. Images of outfits flash on the mirror at the touch of a button, showing how they would look on a customer.

"It can't account for all of a person's little bulges, but it gives a good idea of how you would look," says Bruno Lansing, president of Fashion Systems.

Ronald Alsop, *Wall Street Journal*

VUV as Photolithography Light Source

Arlee Smith (1124) thinks the new vacuum ultraviolet (VUV) light source he helped develop could lead to high-resolution photolithography for manufacturing submicron-width integrated circuits. Resolution in microlithography is limited to approximately the wavelength of the source radiation. So going to finer circuit features requires developing shorter wavelength sources and accompanying optics.

Future high-resolution photolithography may require a light source in the range from 185 down to 110 nm, according to Arlee. In a new SAND report, he examines possible sources in

Fun & Games

Bicycle Touring — The Seventh Annual Bike Trek, sponsored by the American Lung Assn. of New Mexico, is a three-day, 200-mile tour during the Labor Day weekend. Bikers cycling at their own pace start in Albuquerque, tour through Jemez Springs, the Valle Grande, Los Alamos, Santa Fe, Cerrillos, Madrid, and Tijeras Canyon, and finish back in Albuquerque. An introductory talk and slide show on bicycle touring in northern New Mexico will be held on June 17 at 7 p.m. at the American Lung Assn. office (216 Truman NE). For more information, call the Lung Assn. on 265-0732.

Bowling — SANDOE Bowling Assn. April Bowlers-of-the-Month are: Scratch — Len Hansen (1131), 682; and Ona Bellino (DOE), 559. Handicap — Fred Gunckel (2543), 646, 691; and Sally Frew (3523), 547, 679.

Fitness Day — After the predicted-time event on Fitness Day, folks were saying, "This course has got to be shorter than 1.5 miles." And it was — by 0.2 mile. The Fitness Day Committee apologizes and promises to be more careful in the future.

Golf — Sandia Women's Golf Assn. (SWGA) held a major tournament at Los Altos on June 4. The winners were: A Flight — low net, Debbie Tricoglou (7485); most net 3s, Shirley Kendall; most net 4s, Fay Joy; most net 5s, Mary Gonzales (6331). B Flight — low net, Peggy Burrell (3543); most net 3s, Ruth Wright (ret.); most net 4s, Lucy Gray; most net 5s, Lana Lachenmeyer (2520). C Flight — low net, Diane Wilhelm; most net 4s, Pat Neiswander (2523); most net 5s, Eleanor Kelly (ret.); and most net 6s, Betty Worley (4000).

Anyone interested in joining SWGA should contact Marijo Hinrichs (3544) on 6-0464.

Mountain Biking — Join Tom Mayer (5249) and a group of mountain-bike enthusiasts at a Just-for-Fun Race on June 17. It's a race against the clock over single-track trails with the more difficult sections judged as "trials." The object is to ride these sections without taking any dabs (touching a foot to the ground). The dabs will be counted as time. Novice class is four miles with easy sections. The most difficult class has very challenging sections and takes about one and a half hours to complete. Meet at the south end of Juan Tabo at 6 p.m. Follow markers to the course. There are no entry fees or prizes, just fun. Helmets are recommended. For more information, or if you can help, call Tom on 294-3368.

Tennis — The Sandia Tennis Assn. (STA) and the Coronado Tennis Club (CTC) held a Singles and Mixed Doubles tournament on May 21 and 22 at the Coronado Club. In Mixed Doubles, Joe Ruggles (2629) and Charlene Schaldach (2645) defeated Bob (9013) and Audrey Paulsen 5-7, 6-3, 6-4; in Women's Singles, Terry Martinez (1250) bested Judy Hansen (1420) 1-6, 6-3, 6-2; in Men's A Singles, Tim Draelos (9242) beat Mark Tucker (5246) 6-2, 1-6, 6-4; and in Men's B Singles, Frank Peter (2334) defeated Richard Rays 3-6, 6-1, 7-6.

The next tournament will be held on June 25 and 26 at the Coronado Club. For more information, call Mark Tucker on 4-2346.

Challenges Ahead for Nuclear, Conventional Munitions Programs

The nuclear weapon labs face some formidable challenges as they confront the realities of national defense in the post-INF-Treaty world, according to Sen. Sam Nunn, Chairman of the Senate Armed Services Committee.

Nunn, making his first visit to Sandia, was introduced to members of the local press by EVP Orval Jones (20) and by NM Sen. Jeff Bingaman, who noted that Nunn "is the key person in the Senate on defense issues." The press conference in Bldg. 892 on June 1 followed three hours of briefings by Sig Hecker, Director of Los Alamos National Lab, and Orval, as well as others from Sandia and LANL.

After pointing out that members of the Senate have known for a long time about "the wonderful work that the laboratories have performed for the deterrence aspects of our national security," Nunn noted "a lot of other missions under way here [in New Mexico] and being thought of here are the wave of the future."

One mission that poses "a formidable challenge" is "nuclear modernization in the post-INF [Intermediate Nuclear Force]-Treaty era." Said Nunn, "With our allies, we're going to have to think through very carefully what kind of nuclear weapons we're going to need in the future."

Treaty Verification

Another mission involves treaty verification technologies, a growing field for both SNLA and LANL. "One of the most interesting aspects of the presentation this morning," said Nunn, "was the work the laboratories are doing to verify existing treaties — on-site inspection, its relationship to the INF Treaty — and how that work transfers into ideas and concepts for possible future treaties like START [Strategic Arms Reduction Treaty]."

"An area I've been interested in for a long time — and one in which I think NATO is way behind the curve on — is conventional arms control," Nunn continued. "I think the next administration is going to face a very formidable challenge and opportunity in this area. But the verification aspects of that will be the most difficult we've ever faced. Your labora-



SEN. SAM NUNN (left), Chairman of the Senate Armed Services Committee, and Sen. Jeff Bingaman (right), a member of that committee, were recently briefed on Los Alamos National Lab programs by Sig Hecker (second from left), Director of LANL, and on Sandia programs by Executive VP Orval Jones (20). After the briefings, Sen. Nunn spoke briefly on the national labs' weapon and treaty verification programs.

tories are doing an excellent job of getting out in front in some of those procedures."

Nunn called for a reverse approach to the verification issue if/when conventional weapons are to be controlled by treaty: "We always negotiate the details of a treaty and then we turn it over to you folks and say, 'Okay, now verify it.'"

"We need to use the flip side of that version. To really determine what we can afford to agree to in substance, we need to have some pilot project verification while we're beginning conventional arms control talks. The work being done here is very important in that respect."

Nunn also commented on the labs' work in "smart" weapons and armor/anti-armor technology: "We have tremendous challenges with Soviet tanks, and while we're trying to get agreement to reduce those tank armies in the conventional arms control arena, it's enormously important that we send this message to the Soviets — if arms control fails, we [can] deal with the challenge through our armor/anti-armor technology."

"In a period of budget austerity, [the labs'] work

on conventional munitions is also enormously important," he went on. "Our 'platforms' — ships, planes, and tanks — are very expensive. We have to [create] a multiplier effect by developing better munitions to make the platforms more effective."

"So, in all these areas, the laboratories in New Mexico are doing a great deal of work," he concluded. "They have whetted my appetite to come back — not only to see the labs, but to get more in-depth knowledge of these important areas. The national laboratories are indeed national assets."

Asked whether the defense budget should be cut, and if so where, Nunn noted that the defense budget has been reduced about 12 percent in real terms in the last three years. "The goal of the next President and next Secretary of Defense should be to stabilize that defense budget," he stated. "We're not going to see huge increases, but I hope we can say to the DoD and the military services, 'Okay, manage your budget on the basis of a stable budget — last year's budget plus the rate of inflation — for the next three or four years.' I think we can get a lot more efficiency from our assets that way." ●BH

Supervisory Appointments



STEPHEN ORTIZ to supervisor of Satellite Integration Div. 9216, effective April 1.

Steve was a member of the Facilities Systems Engineering Division from February 1980, when he joined Sandia, until his promotion. His work included the design and implementation of safeguards and security systems for DOE facilities.

He has a BS in EE from UNM and an MS in EE from UTEP.

In his spare time, Steve enjoys basketball, racquetball, fly-fishing, bow-hunting, and spending time with his family.

Steve and his wife Terri have two children and live in Peralta.

ANN CHIPMAN to supervisor of Advanced Concepts Div. 5251, effective May 16.

Ann has worked in software development since she joined Sandia in June 1974 as a member of the NTS Instrumentation Development Division. She was a member of Sandia's OYOC (One Year on Campus) program. In 1979, she joined the Minicomputer Software Division; in 1982, she transferred to the Safeguards Engineering Department as a member of the Systems Engineering Division. In 1984, Ann joined Systems Development Div. 5256, where she worked on software and hardware development.

She has a BS in math from New Mexico State University and an MS in computer science from Purdue University. She is a member of the Association for Computing Machinery.

Ann's spare-time activities include playing softball, hiking, fishing, and sewing. She lives in the NE Heights.

BRUCE DAVIS to supervisor of Payment Processing Section 154-1, effective May 16.

Bruce joined the Labs in 1980 as a member of the Property Accounting Division. In 1981, he moved to Purchasing's Small Disadvantaged Business Relations Division. He became a buyer in 1981 for another Purchasing division, and in 1982, joined the Purchasing Planning Division. Bruce was Org. 2300 administrative assistant from 1983 until 1986, when he transferred to the Energy and External Liaison Budget Division.

He has a BA in accounting from UNM and an

MBA from Highlands University.

Church activities take up Bruce's spare time. He and his wife Alice have one daughter and live in the SE Heights.



ANN CHIPMAN (5251) and BRUCE DAVIS (154-1)

Quality Coordinators Are Helping to Ensure Excellence

"Is there anything I can do to help you do your job better?"

That's a question Gene Smit (3411) asks frequently while carrying out his duties as quality coordinator for 3400. As such, Gene helps line organizations establish quality objectives and requirements by identifying programs or activities that require a quality plan. He also conducts periodic appraisals of the quality plans and reports results to the responsible manager. He may also request follow-up reports and confirm corrective actions.

"But I'm not a policeman," says Gene. "I'm not out to catch the 'culprit' who makes a mistake, for example. My basic function as quality coordinator is to provide information to those responsible for producing the product — which, in 3400, is a service, but in other organizations might be a piece of hardware, software, a design activity, or a report. That information is then used by the line organizations to establish the procedures necessary to achieve optimum quality."

Gene is one of 83 Sandians (see box) designated by director — or sometimes by department manager or vice-president — to spend all or part of their time helping to ensure the quality performance that has earned the Labs a reputation for integrity and reliability.

Sandia's 'Blue Book'

All quality coordinators work within the guidelines described in the publication they refer to as their

Sandia's Quality Coordinators

- | | |
|-------------------------|-----------------------------|
| 123 Frank Ortiz | 7131 John Patrick |
| 1251 Bertram Arnold | 7137 Dean Kuehl |
| 1414 Mide Griesmeyer | 7171 John Tebbs |
| 1511 David Gartling | 7201 Chuck Trauth |
| 1523 Johnny Biffle | 7212 Jim Wadell |
| 1531 Sam Thompson | 7213 Ben Sedlack |
| 1550 Randall Maydew | 7223 Bob Easterling |
| 1556 Bill Oberkamp | 7233 Bob Axline |
| 1813 Allison Davis | 7240 Turk Levy |
| 1833 Frank Zanner | 7243 Rick Crabb |
| 1845 Mae Lambert | 7251 Chris Arana |
| 2361 Thomas Williams | 7252 Dave Bushnire |
| 2513 Dennis Mitchell | 7253 Guy Dahms |
| 2515 Paul Wilcox | 7254 Sharon Sardalos |
| 2561 Merril Robinson | 7262 Frank Ross |
| 2639 Paul Lemke | 7265 Veronica Chavez-Soto |
| 2814 Margaret Olson | 7484 Barbara Botsford |
| 2826 Arthur Ahr | 7485 Naomi Christensen |
| 2851 Larry Grube | 7521 Jack Mortley |
| 3310 Bill Burnett | 7537 Ned Keltner |
| 3320 Larry Clevenger | 7544 Dave Smallwood |
| 3411 Gene Smit | 7552 Bill Shurtleff |
| 3411 Raymond Sanchez | 7552 Charles Little |
| 3426 Michael Torneby | 7553 Marv Morris |
| 3732 Raymond Shaum | 7555 Bill Boverie |
| 3732 Adele Caldwell | 7556 Jose Llamas |
| 4000 Betty Worley | 7831 Elwin Schaefer |
| 5200 Debbie Eaton | 8161 Maurice Reynolds |
| 5111 Don McCoy | 8285 Paul Van Dyke |
| 5217 Sig Schneider | 8301 Gary Drummond |
| 5253 Ronald Halbgewachs | 8479 Otto Schreiber |
| 6210 Billy Marshall | 8532 Lewis Roach |
| 6233 Terry Gerlach | 9010 Curtis Hines |
| 6310 Bob Richards | 9111 Bobby Corbell |
| 6323 Fred Sena | 9122 Emil Kadlec |
| 6330 Gary Romero | 9131 Farrell Perdreauxville |
| 6423 Harry Delap | 9142 Lawton Miller |
| 6440 Doug Brosseau | 9213 Chuck Kyger |
| 6516 Gene Emerson | 9233 Bill Goldrick |
| 7111 Les Hill | 9243 Dave Lee |
| 7116 Ray Reed | |
| 7125 Robert Rutter | |

Changes after May 1 are not reflected in this list.



1ST ANNUAL QUALITY COORDINATORS MEETING

Sandia National Laboratories

SANDIA'S QUALITY COORDINATORS — 41 of them — met recently for the first time for a conference, which included talks and workshops. Shown are David Smallwood (7544), Gene Emerson (6510), Turk Levy (7240), Barbara Botsford (7484), Dennis Mitchell (2513), and Debbie Eaton (5200). Organized by Barbara, Mary Prickett (7252), and Bill Thomas (7250A), the conference provided an opportunity for quality coordinators to exchange ideas and develop a network of contacts across organizational lines. "Having contacts in other organizations makes the work of the quality coordinator more effective," says Barbara. "Sandia has a wide variety of 'products' — hardware and software; ideas, designs, and reports; technical and non-technical support and services — and the quality of work in one organization often depends on the quality of another organization's product. Having a ready contact in another organization can facilitate solving some kinds of problems."

"Blue Book" — the "Sandia National Laboratories Quality Plan" issued by Technical Support Vice-Presidency 7000.

This document identifies the critical elements of the Sandia National Laboratories Quality Program and designates Systems Evaluation Directorate 7200 as the organization principally responsible for assuring successful implementation of the plan.

"The role of 7200 in implementing this plan is to help line management, not to interfere," says Bill Thomas 7250A. "We particularly try to avoid arbitrary application of unneeded controls."

"Actually, this plan is already a part of established management control systems," continues Bill. "It's implemented through subordinate or individualized quality plans developed by line managers and supervisors for specific design activities, projects, functions, or products — based on individual needs and objectives."

Tailor-Made Plans

"This is where quality coordinators can play a key role," notes quality engineer Mary Prickett (7252). "By working with individual organizations, the coordinators can help line management devise

quality plans that are appropriate for the nature of the work involved. The plan can be tailored to match the complexity, importance, and degree of risk of a particular program or activity.

"Quality coordinators can also help in analyzing the desired results and in suggesting ways to measure the quality of those results," continues Mary. "And they can help outline methods for spotting shortcomings and for follow-up actions to prevent recurrences of quality failures."

"But the coordinators' work is not restricted to assisting in the preparation of quality plans or to working within them," notes Mary. "Often they can help an organization improve efficiency or quality by identifying isolated problems that don't require a formal quality plan to solve."

"What all quality coordinators are working toward," says Mary, "is a broadened view of what quality means. This was one of the reasons we organized the conference for quality coordinators. We'd like quality to be seen as something inherent in the various processes and operations that combine to produce a product — not as something that's sort of smeared onto the product at the end of the process."

•DR



VP 3000 DENNIS ROTH (right) attended Operation Bosslift, held this year at Ft. Bragg, N.C. Sponsored by the US National Guard and Reserve, the event recognizes employer support of the Guard and Reserve and seeks to educate employers about the critical nature of the program. "It was extremely interesting and informative," says Dennis. With him here are (from left) Lt. Col. Charles Heberle of the 82nd Airborne; retired Sandian Dean Irvin, chairman of employer relations for the Guard and Reserve in New Mexico; and Brig. Gen. Joseph Albi of the US Air Force Reserve.

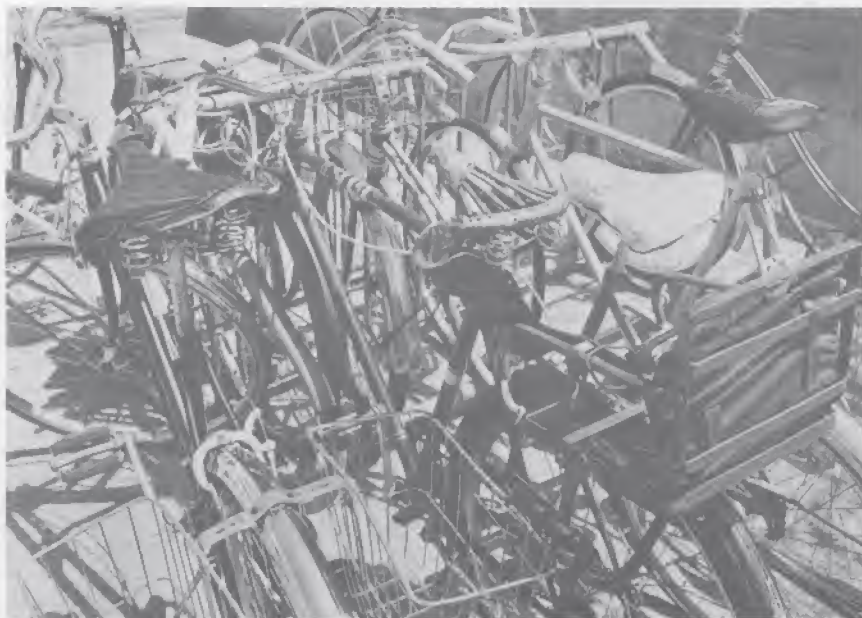
Photo Potpourri



LOOKS LIKE HE'S FLYING — Larry Johnson (DMTS, 5123) was the first-place winner in the 65-plus age bracket of the Jay Benson Memorial Triathlon of Albuquerque held on KAFB April 24. Larry, age 68, is a regular participant in local marathons. The Triathlon features biking, running, and swimming. "It's a lot of fun," says Larry. "The great thing about a triathlon is that if you're not real good at one part, you can make up for it in another."



IN SPITE of twitting the Payroll folk by insinuating that paychecks get delivered by stagecoach (LAB NEWS, April 22); in spite of "clarifying" the matter by saying it's not how, but whether, the paychecks get delivered (May 6); and in spite of turning in his time card 6 hours 10 minutes late on May 13, LAB NEWS Editor Bruce Hawkinson (3162) was recently honored by all members of Payroll (aka Employee Accounting Div. 152) during a ceremony in the office of VP Dennis Roth (3000). After Chief Schwyzer, 152 supervisor, listed the charges, he provided the Sweet Old Bruce crown, sash, and certificate. Dennis then formally presented the paycheck. (Editor's Note: As Abe Lincoln once said, quoting a man who had been tarred, feathered, and ridden out of town on a rail, "If it warn't for the honor of the thing, I'd of just as soon walked.")



REMEMBER THAT OLD BIKE you promised yourself you'd fix up this summer — the one now leaning forlornly against a rack somewhere around Sandia? Well, it's time: Repair it or remove it — and do it off Sandia premises. Three reasons for the request: (1) Decrepit bikes are ugly — take another look at the photo; (2) Parking space for bikes, now that warm weather brings out the seasonal riders, is limited; and (3) Sandia is neither a storage site nor an "elephant graveyard," where bicycles go to die. Sandia does *not* want to bring out the bolt cutters necessary to start hauling off apparently abandoned bikes and donating them to a charity or a landfill. But, if this warning fails . . .



SO YOU THINK YOU KNOW SANDIA — Question: Where was this photo taken? See Page Thirteen for the answer.



CLEAN ROOMS in the RHIC II Lab were studied recently by the National Fire Protection Association's Technical Committee on Clean Rooms. The committee, which includes members of 10 organizations, is developing the national standard for the fire protection of clean rooms. Don Davis (2130, left) led committee members on a RHIC Lab tour designed to suggest solutions to the special problems associated with preventing fire and smoke damage to clean rooms and minimizing the contamination of expensive microelectronic circuits. The tour was arranged by committee chairman Dennis Kirson (7862, center).

And a Good Time Was — Of Course — Had by All

Take Note

Orval Jones (20) was a guest speaker at a conference held June 6-8 at LANL on "The Future of Nuclear Weapons: the Next Three Decades." His topic was nuclear weapons engineering.

Bob Eagan (2140) was recently appointed treasurer of the American Ceramic Society, Inc. He's an ACS Fellow, currently chairs the Society's Phas- of Support Committee, and serves as president of the Ceramic Educational Council.

John Lorenz, Sharon Finley (both 6253), and Dave Norman (New Mexico Tech Geoscience Dept.) won the American Association of Petroleum Geologists' Jules Braunsstein Memorial Award for a poster that takes a sobering look at four victims of domestic violence — three women and a man — who candidly detail the feelings of terror and degradation they experienced when abused by spouses, relatives, or boyfriends. Also included is footage of APD officers responding to domestic violence calls, and taped transcripts of calls from victims to Albuquerque's 911 emergency number. "All too often," says producer Dale Sonnenberg (brother of Bob, 7210), "homes are not the secure, warm places they're supposed to be. Rather, they are the scenes of silent, unseen, and often violent crimes. This film is an attempt to rip the covers off domestic violence, to create an awareness that anyone — regardless of economic status or ethnic background — may at some time be touched by the problem."

Documentary Hard-Hitting In More Ways Than One

"Behind the Picket Fence," a documentary about the widespread problem of domestic violence, airs on KNME-TV next Wednesday, June 22, at 9 p.m. The black-and-white film takes a sobering look at four victims of domestic violence — three women and a man — who candidly detail the feelings of terror and degradation they experienced when abused by spouses, relatives, or boyfriends. Also included is footage of APD officers responding to domestic violence calls, and taped transcripts of calls from victims to Albuquerque's 911 emergency number. "All too often," says producer Dale Sonnenberg (brother of Bob, 7210), "homes are not the secure, warm places they're supposed to be. Rather, they are the scenes of silent, unseen, and often violent crimes. This film is an attempt to rip the covers off domestic violence, to create an awareness that anyone — regardless of economic status or ethnic background — may at some time be touched by the problem."

Following the film, KNME will present (at 10 p.m.) a live one-hour forum to discuss domestic violence issues. Panel participants are Police Chief Sam Baca, Beverly Wilkins, director of the Shelter for Victims of Domestic Violence; Erma Sylvester, director of the Domestic Violence Family Program; and Metropolitan Court Judge Diane Dal Sutto. Note: The documentary occasionally contains "rough" language, so parental guidance is suggested.

Sympathy

To Steve Romero (2114) on the death of his mother in Albuquerque, May 19.
To Bernice Vigil (2831) on the death of her father and Liz Schumann (3543) on the death of her grandfather in Santa Fe, June 5.
To Glenn Kuswa (4030) on the death of his wife near Bernadillo, June 6.

New Format for Medical Care Plan EOB

During June 1988, Sandia's Medical Care Plan (MCP) administrator, Provident Life and Accident Insurance Company, is converting Sandia's MCP to a new computer claims-processing system. As a result, Explanation of Benefits (EOB) statements and letters of communication will be sent to Sandians in a different format. Sandia is the 15th Provident customer to be converted this year. No checks for reimbursement of medical claims will be printed for one to two weeks during this conversion. There is no change in plan design or benefits structure.

1700 Attend Annual Retiree Picnic

Good weather, good friends, good food, good memories — Sandia's retirees, their spouses, their hosts and hostesses gathered on May 28 at the Coronado Club for the 23rd annual Retiree Picnic.



The Flip Side of Science on the Far Side of the World

By Ken Frazier (3161)

There we were in Beijing, capital of the People's Republic of China, a few minutes walk from the colossal Tian'anmen Square (Gate of Heavenly Peace), Mao's Tomb, the Great Hall of the People, and the Forbidden City (site of this year's Academy Award-winning film "The Last Emperor"). And what were we doing? Spending most of our 12 days in meetings, lectures, demonstrations, and tests—business totally unrelated to my job at Sandia.

Oh, we did have some opportunities to explore on our own. We walked the broad Chang'an Avenue, smiled at families on outings with their kids, enjoyed kites flying over the square. We explored the shops on Wangfujing Street and experienced the sights and smells of the busy sidewalk markets. We wandered through the symmetrical Imperial Palace complex, climbed the Great Wall, descended into the Ming Tombs, saw a re-creation of a Tang dynasty musical performance, and marveled at a show of Chinese acrobats. No doubt about it, we had fun.

But this was a business trip (although it wasn't Sandia business and the time off was "vacation"). So I can hardly complain about the days and nights of meetings. That's why we were there.

What jarred our minds was this — the contrasts between our meetings with members of China's scientific community and our encounters with a series of "qigong" masters, self-declared "psychics," promoters of paranormal miracles, and practitioners of Chinese traditional medicine.

It was like coming from discussions with scientists and engineers at Sandia or Los Alamos and then plunging into the world of channelers, crystal healers, and other New Age gurus who populate the mystical hills of Santa Fe and Taos. Talk about two different worlds!

As True of China as of America

Conflicts between science and pseudoscience — or between a scientific, rational world view and a nonscientific, mystical world view — continue throughout the world. Often the two exist side by side. This is as true of China as it is of America. In America it's even true of the White House — witness the embarrassment over revelations that our President has made scheduling decisions based on astrological advice.

Well, I can see I've gotten ahead of myself.

During most workdays, as a member of Public Information Division 3161, I write news releases about Sandia's research and help the news media report on same. In the evenings and weekends, I deal with the flip side of science — pseudoscience and all its attendant problems.

As editor of *The Skeptical Inquirer*, I work with scientists and science-minded authors all over the world in combating out-and-out pseudoscience and

(more typically) in publishing critical, scientifically informed evaluations of fringe-science and "paranormal" claims. We try to provide fact to balance fiction, sense to counteract nonsense. We are pro-science, pro-education, and pro-critical thinking. (Interested Sandians are invited to participate).

The "we" in this case is the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP), the Buffalo-based nonprofit organization that publishes *SI*. Science policy officials and the leading newspaper of science in China invited CSICOP to send a delegation to China. They were concerned about a resurgence of superstition and a rise of uncritical popular interest in "psychic," mystical, and paranormal matters in China.

There were six in our group: philosopher and CSICOP chairman Paul Kurtz (SUNY-Buffalo), psychologist James Alcock (York University, Toronto); magician/investigator and MacArthur Fellow James Randi (twice a Sandia colloquium speaker); aerospace journalist Philip Klass (senioretired from *Aviation Week & Space Technology*); Barry Karr of our Buffalo office; and myself.

What's Science — and What Isn't?

China has embarked on an effort to modernize. It needs to boost economic productivity. It realizes that science and technology are keys to doing so. Many of the scientists we met were concerned that this already difficult task becomes even harder if the populace has serious misunderstandings about what is science and what isn't.

As our host, Lin Zixin, told the Associated Press in Beijing (whose reporters accompanied us for a time): There is "growing confusion between science and superstition in China. . . . This is serious for our country and modernization." He expressed hope our visit would help counter that confusion. (The AP story about our visit was published across the United States, including the *Albuquerque Journal*, while we were still in China.)

Lin is editor-in-chief of the *Science and Technology Daily*, which he told me is the only daily newspaper of science in the world. He is also a prominent figure in science policy in China. Most of our formal meetings in Beijing — our first eight days in China — were in modern conference rooms and auditoriums at the Institute of Scientific and Technical Information of China. Discussions continued at private evening banquets.

We all gave several lectures. Randi, a key member of our group, demonstrated the tricks used to accomplish "psychic"-type feats such as spoon-bending and psychic surgery. He exposed the physical principles behind a recently televised performance in China by a qigong master who claimed his feats were a result of antigravity.

I described results of a recent US National Research Council study for the Army Research Institute. It concluded that — despite 130 years of research — there is no scientific evidence for the existence of extrasensory perception (ESP) or for psychokinesis (moving an object with mental powers) — let alone for bizarre "psychotronic" weapons touted in some news reports out of the Pentagon a few years back. Lin told me many Chinese had heard of these latter reports; he asked me to discuss the NRC report's conclusions in each of my talks.

Early in our visit we met many science leaders. Among them were Wu Mingyou, deputy chairman of the Research Center of Economic, Technological & Social Development of the State Council and former deputy minister of the Commission for Science and Technology; Yu Guangyuan, a former vice-president of the Commission for Science and Technology and member of the Presidium of the Chinese Academy of Sciences (and author of a book highly critical of paranormal claims); Xu Liancong, director of the Institute of Psychology of the Chinese Academy of Sciences; Hu Ping, director of the National Research Center for Development, Science, and Technology (who told me he has visited the US 15 times as China's delegate to the United Nations science and technology commission); and many others.

Their fields ranged from physics to philosophy. Most of those we initially met were in strong support of our goals.

A Studious Search for Miracles

But we soon got a taste of conflicting viewpoints. From the second day on, we spent much of our time visiting such places as the Beijing College of Traditional Chinese Medicine and (later in Xian) the Xian Paranormal Function Application Association. At these places, we patiently listened to proponents' claims and watched their demonstrations. Most of the time we were able to follow up with some tests of our own.

A 12-page preliminary report on these tests will be published in the summer issue of *Skeptical Inquirer*. We studiously searched for any "miracles" — or at least *something* extraordinary. We found none.

One example: For some years, reports have circulated in the West that some children in China supposedly possess special psychic powers, an ability to read characters on pieces of paper stuffed in their ears or armpits. (Yes, it sounds crazy, but many responsible people have taken these reports seriously.) In Xian we met some of these children (and their mentor) and performed controlled tests over two days. Under our strict observation and controls, they could do nothing. They failed at determining Chinese characters.

(Continued on Next Page)



ELEVEN-YEAR-OLD GIRL (right) claims to be able to "psychokinetically" alter a match inside a sealed match box. Here, she looks on as James Randi works his own brand of magic on the same boxes. Between them is Wu Xiaoping, a reporter for China's *Science and Technology Daily* and a hostess for the CSICOP group.



TWO CHINESE CHILDREN with alleged psychic powers and their mentor. Under his tutelage, the children are supposedly able to read characters on pieces of paper stuffed in their ears or armpits or sealed in envelopes. They were unable to duplicate the feats under CSICOP-controlled conditions.



TIME OUT FOR TOURISM — The CSICOP (Committee for the Scientific Investigation of Claims of the Paranormal) team didn't investigate paranormal claims every minute. At the Great Wall of China are (from left): Ken Frazier (3161), journalist Phillip Klass, Chinese journalist (and the group's hostess) Wu Xiaoping, psychologist James Alcock, magician/investigator and MacArthur Fellow James Randi, CSICOP staffer Barry Karr, and CSICOP chairman Paul Kurtz.

(Continued from Preceding Page)

acters sealed inside envelopes. They failed in their alleged ability to "psychokinetically" alter a match inside a sealed matchbox.

Then we allowed their mentor to do the test *his* way. Under his brand of "science," they ran out of the room and out of the building, and kept the matchboxes for some 10 hours, with no one watching them. The one matchbox whose contents were changed (a broken match changed to a whole match) had so obviously been tampered with that we could hardly keep from laughing. We determined that the children were having great fun playing games with a very naive and credulous "investigator" who wanted strongly to believe.

Sincerity and Self-Delusion

In other locations we tested astonishing claims that two women could psychically X-ray our bodies (they couldn't tell whether we had our tonsils or appendices); and that a qigong master could "send" energy through walls to "activate" a patient in the next room (we showed there was no correlation between times he "sent" and she "received"). And so it went.

We found most of these people sincere and cooperative. Few had any real scientific training. Most honestly felt they had the abilities claimed. The psychology of self-delusion is a rich field. But no one had ever performed controlled tests. In fact, the very concept of testing was alien to many of these paranormalists. On the other hand, we learned of very stringent, controlled, videotaped tests (of other "psychic" children) carried out in 1982 by trained Chinese scientists. They clearly showed the children cheating. *These* tests, however, are virtually unknown in China.

Even in China, it appears, the news media prefer sensational stories of "miraculous" abilities over reports of scientific tests having less dramatic conclusions.

In fact, we found that China's situation — allowing for some cultural differences — is not all that different from the West's with regard to public belief in the paranormal and the many factors that reinforce it.

We had an extraordinary time, and we hope we made some difference. My one regret: We didn't get a chance to visit the universities, laboratories, and research institutes where "real" science is being done in China. Maybe next time.

The Fascinating Old and the Exciting New: Albuquerque

Albuquerque is unique because it combines the fascinating old with the exciting new. You will find in Albuquerque civilization that goes back thousands of years. The Albuquerque area has had human inhabitants for over 20,000 years, and the earliest remains known are those of Sandia Man found in a cave in the Sandia Mountains east of Albuquerque. Today you can visit the cave that ancient man used as his home. But if you go just a few miles farther, you can ski in the same mountains and ride a modern chairlift up to the Crest. From the top of the mountain, you can swoop down into Albuquerque on the largest tram in the world, an engineering wonder of the twentieth Century.

Just a few miles from the base of the tram, you can find another example of ancient culture. Sandia Pueblo sits on the outskirts of Albuquerque and had a thriving civilization long before Albuquerque existed and long before Columbus set foot in the New World. You can still enjoy the traditions of that civilization today because every June 13 the pueblo has a corn dance using symbols and music handed down for over a thousand years.

After the corn dance, you can drive just a few miles and visit an atomic museum at another Sandia. This Sandia is Sandia National Laboratories, one of the foremost engineering research centers in the world. No matter what Sandia, from ancient caves to pre-Columbian dances to modern technology, Albuquerque is unique.

THIS ESSAY, written by Jefferson Middle School 7th grader Ryan Harrigan (son of Ray, 1414), took first place in the 7th grade category in the recent "What's Unique About Albuquerque?" contest. For his efforts, Ryan received a VCR for his school and, for himself, a portable stereo and some attention from Pres. Welber (who sent the essay along to LAB NEWS).

Science Gets Stamp of Approval

On April 28, 1988, China's Ministry of Posts issued a set of four commemorative stamps honoring "Modern Chinese Scientists." The first of a series, the stamps honor four prominent 20th-century Chinese scientists: a geologist, a meteorologist, a physicist, and a mathematician.

A few years ago, the US Postal Service issued a set of four commemoratives honoring pioneering electrical engineers, but, says Ken Frazier (3161), "it's hard to think of the last time there was a US stamp honoring modern American scientists for basic research."

Profundities Wasted on Pubertarians



Continuing liberal education is just as essential as continuing professional education for the quality of life of individuals in the modern world and for the health of our institutions and society. . . .

Many of the most profound problems of humanity are peculiarly *adult* problems. Only as adults are we likely to worry and think seriously and at length about the deeper structures of selfhood — our unconscious desires; our obligations to people in the wider world; problems of war and peace, power and authority, freedom and justice; how to cope with failure; what makes life meaningful; art and its interpretations and revelations; how to grow old; death and dying; life-despair and religious faith; and the like. . . . It is only as adults that we have the experience with which we can really appreciate those works of literature, art, religion, and philosophy which illuminate the human condition. . . . And yet our exposure, in any kind of systematic way, to the humanities, to historical and cultural studies, ends for most of us a few years past puberty.

Phi Kappa Phi Journal

Take Note

Al Switendick's (1151) paper, "Electronic Energy Bands of Metal Hydrides — Palladium and Nickel Hydride" (cited in more than 225 publications), was the "Citation Classic" in the May 30 issue of *Current Contents (Physical, Chemical, & Earth Sciences)*, a weekly listing of journal and book articles on physical sciences published by the Institute for Scientific Information.

* * *

Betty Turk (4010) recently became a Certified Legal Assistant after passing a two-day exam given by the National Association of Legal Assistants at the UNM Law School in March. The certification is approved by the American Bar Association.

* * *

Doug Blackledge (son of Mike, 7254) was recently appointed to the US Air Force Academy. He was nominated by both Sen. Jeff Bingaman and Congressman Manuel Lujan. A recent graduate of Manzano High School, Doug finished 15th in his class of 532.

* * *

The annual Japanese Festival, Omatsuri, will be June 26 from 11 a.m. to 7 p.m. at Minato Square (10721 Montgomery Blvd. NE). This year's festival, sponsored by the Japanese American Citizens League, celebrates more than 98 years of Japanese culture in New Mexico, and has the theme, "Kodomo No Tami Ni" (for the sake of the children). Activities include games and other events for children. Entertainment features Suzuki violinist Brooke Brown, the Denver Taiko Group performing traditional music on drums, a folk dance with the audience invited to participate, an Ikebana flower-arranging demonstration, vocalist Jay Kang, Kenjutsu and Ki-Aikido martial arts demonstrations, the Pajarito Ballet, poetry singing by the Simpu-Ryu Shigin group, and traditional dances by Mariko Thomas. Japanese food, folk art, souvenirs, and gifts will be available at various booths. Sandians involved in the planning, organizing, and staging of this event are Stephen Casalnuovo (2131), Davis Begay (7813), Wade Ishimoto (5210), Jacqueline Morimoto (5220), Ray Sakamoto (7481), and Randolph Shibata (3714). For more information about Omatsuri or JAACL membership, contact Jennifer Yazawa on 255-8557.

feed back

Q. Who reviews medical claims when it has been decided that charges are high?

A. The process can be one of two types: (1) *Inquiries*: These are informal and are usually handled directly by the Phoenix claim-processing office. The inquiry generally is initiated by the plan participant via a phone call or letter to Phoenix. The claim is then reviewed by someone other than the original claim processor. If the problem is not resolved at that level, Phoenix will attach an Appeal Procedure form to the response so that the claimant can formally request a Western Home Office review.

(2) *Formal or ERISA Appeals*: These are handled by the Western Home Office in Los Angeles. The technical analyst requests the file from Phoenix to determine whether the issue is contractual (i.e., a covered benefit under the plan) or medical (i.e., charges in excess of reasonable and customary [R&C] for a surgical procedure). The people involved in this review process have specialized medical knowledge; they include a staff of Medical Directors — physicians able to consult with the medical community and with Provident's Medical Director at the National Home Office in Chattanooga, Tenn., and to obtain up-to-date information about the types of claims they review.

The Western Home Office review of a surgical charge will involve review of various factors such as the patient's overall physical condition, the number of procedures performed during one operative session, the size or degree of repair required, the number of incisions required, the patient's reaction to surgery, the amount of time required because of complicating factors, etc. These factors normally will not be reflected on the billing but rather in the Operating Room Report or Pathology Report of Anesthesia Records. For this reason, these reports will be requested when the charge exceeds the R&C charge set for the procedure so that appropriate adjustments may be made. Also, a review of these reports can determine whether the procedure performed was actually the procedure that was billed.

The Sandia Medical Care Plan administered by Provident limits benefits payable to R&C allowances, as did the earlier plan that was administered by Equitable. Sandia pays and instructs Provident to check each claim against plan provisions because of the magnitude of the dollars involved: Sandia's medical claims are now about \$26 million annually. R&C allowances do vary by administrator, but generally are calculated by gathering claims data from a specific geographic area.

These claims data are a mix of actual claims filed by Sandia employees (and other customers of the administrator) and claims information from other insurance companies and claims administrators. The R&C allowance is then set at the 90th percentile. This is done for several thousand procedural codes. These R&C allowances are updated twice a year to keep them current.

In addition, Sandia monitors monthly reports from Provident to ensure that R&C limitations are not excessive. In fact, less than 1 percent of the dollar amount of all Sandia-submitted claims are limited because of R&C. (National studies indicate that R&C limits affect about 2 to 3 percent of all submitted claims.)

Ralph Bonner - 3500

Q. What is Sandia's policy on telephone answering machines? Our administrative assistant told me that, because they are "recording devices," I could neither purchase one through Sandia nor bring in my own. However, many Sandians — secretaries and non-secretaries — have such machines. If having a "recording device" is a problem, then why are any allowed at all?

A. Sandia's policy on telephone answering machines is taken directly from DOE orders that prohibit their use in security areas. You see machines still in use in the Tech Area because, when DOE first imposed its prohibition, we requested that we

be allowed to continue to use the machines on hand until we could find a suitable replacement; DOE honored our request.

The search for a replacement for individual answering machines resulted in our locating something called a Voice-Mailbox system. It is a central automated answering system that provides the features of an answering machine, but without the associated security problems. Divs. 2613 and 3433 are evaluating commercial systems currently available and will implement a system for Labs-wide use. Once this system is in place, all other answering machines will be removed from the Tech Area.

Jim Martin - 3400

Q. The American Cancer Society recommends that women over the age of 40 get a mammogram every two years. This procedure detects breast cancer long before it can be felt. (Once it can be felt, it is often too late.) I have a family history of breast cancer; therefore, I have the mammogram religiously every two years. In the past, Equitable did not question the validity of this procedure, given my family history. However, Provident refuses to pay the bill, since it is "a routine procedure." Provident also told me that if the doctor suspected breast cancer, then it would have paid the bill. Provident's representative informed me that this is "Sandia's requirement." My question is: Who makes this policy — the insurance company, which pays the bills, or Sandia, which pays the premiums?

A. The Medical Care Plan is a comprehensive health plan designed to protect plan participants from financial hardship associated with major medical expenses, rather than the relatively minor expenses of routine and/or preventive medical care (i.e., routine tests or physicals).

Provident's exclusion of routine procedures is consistent with the current plan design determined by Sandia. Contrary to the assumption in your question, the Medical Care Plan is now self-insured, which means we no longer pay a premium for an insurance company to fund and pay claims. Rather, Sandia pays Provident an administrative fee to process claims; the actual cost of the claims is a direct cost to Sandia.

However, Sandia has instructed Provident that "family history" validates a "medically necessary" diagnosis for mammograms. And we are considering making the coverage of mammograms, whatever the family history, consistent with our current coverage of pap smears.

Sandia agrees that wellness and preventive care are extremely important; that is why the Total Life Concept program (administered by Medical Dept. 3330) was developed. However, we hope that rational medical care is not sought purely on the basis of whether or not the cost will be reimbursed.

Ralph Bonner - 3500

Q. For many years, Sandia Livermore employees have had the opportunity to select from several health plan options, including HMOs (health maintenance organizations). It is my understanding that Sandia Albuquerque's experience with an HMO left a negative impression, which has precluded recent consideration of an alternative choice. Isn't it about time that SNLA take the initiative and provide to its employees in Albuquerque health care option choices comparable to those available in California, without being required to do so as a result of some health care plan mandate?

A. The options available to Sandia employees in the Livermore area are the Sandia Medical Care Plan, Kaiser HMO (since 1972), and Foundation HMO (since 1986). As you mention, several HMO options were provided to SNLA employees in the mid-70s. These HMOs cancelled their contracts with Sandia because of various financial reasons, including overutilization. Financial management and medical delivery management have improved since that period. However, no other Albuquerque HMO has

actively solicited Sandia's participation, perhaps due to some carryover anxiety about the Sandia population, newness of the HMOs, or capacity concerns.

Sandia is committed to providing stable, established, high-quality, and comprehensive medical care options for its employees. However, we do not feel it is in the best interest of Sandia or its Albuquerque employees to actively pursue participation in a local HMO at this time. Here are the reasons:

1) The fiscal health of the current Albuquerque HMOs is unclear. Lovelace is currently the only long-standing and profitable local HMO, but it is already serving 75,000 participants.

2) The ability of local HMOs to support utilization by the sizable Sandia population is questionable.

3) Evidence suggests that offering HMO options may actually increase Sandia's medical care costs, which we must carefully control and manage. Sandia spent about \$26 million during 1987 for medical care benefits. Additionally, the cost of HMOs has generally risen to levels above self-insured comprehensive medical plans. This would mean employee out-of-pocket contributions for enrollment in an HMO.

4) The Albuquerque HMO industry is currently undergoing change. Recently, a major HMO limited its provider (hospital and physician) options. It is felt that this limitation will have significant impact on the other Albuquerque HMOs during the next six to twelve months.

5) Proposed federal legislation may have an adverse effect on the financial stability of federally qualified HMOs.

We will continue to monitor the Albuquerque HMO market. If, in the future, the success of local HMOs appears encouraging, and the HMO market is able to handle the impact of the Sandia population, Sandia will consider offering an HMO to its Albuquerque employees.

Ralph Bonner - 3500

Q. How can employees get sufficient information about their benefits to make proper financial plans? The savings plans' "earnings factors" are difficult to calculate. The information published in the Weekly Bulletin is often untimely and sometimes misleading. We are not, as individuals, buying or selling in our Savings Plans. We have other avenues of investing for retirement that can be adjusted if we only knew what the various elements of the Savings Plans were worth.

Also, the options that must be exercised and decisions that must be made at the time of retirement are not necessarily only a short-range problem for employees planning retirement; for many, it is of intermediate- or long-range concern. Again, how can one make a meaningful financial plan with what little information we have concerning retirement options and values?

A. Sandia recognizes the need for timely and accurate information for employees considering possible retirement. A wide variety of employee benefits information is available to employees. These include Summary Plan Description booklets, informational announcements, prospectus materials, Annual Benefits Statements, and SLLs. The Benefits Department holds monthly meetings that address pay-out options and tax issues related to the savings plans. You can arrange to attend these meetings by calling Peggy Burrell at 4-7336.

In addition, the Benefits staff is available to assist with individual retirement counseling. Also, we have discussed with groups of randomly selected employees ways to improve benefits communication efforts, and we are now working to make communication a primary area of focus.

We regret you feel that the savings plans information published in the *Weekly Bulletin* is sometimes misleading. We feel confident AT&T takes due care in ensuring the accuracy of the information report-

(Continued on Next Page)

feed back

(Continued from Preceding Page)

ed. In some instances (for example, after the capital market volatility of October) some of the usefulness of certain values is indeed negated. Your perception of untimeliness with respect to reporting of monthly earnings factors is understandable. However, please bear in mind that AT&T must first close the books for the month before it can determine the earnings factors for that month. Generally, the factors are determined about 25 days after the end of the month and then transmitted to Sandia about 10 days later.

In replying to your inquiry, we have addressed only some savings plan considerations. You are certainly correct in saying that employees nearing retirement are confronted with many choices and decisions. The importance of each option varies with individuals. If you would like additional discussion on the areas most important to you, please call the Benefits office.

Ralph Bonner - 3500

Q. Sandia's Medical Care Plan unfairly discriminates against the diseases of chronic mental illness by not providing coverage for outpatient treatment on a parity with other illnesses. Mental illnesses are scientific and biological entities, similar to diabetes, that can be treated, but as yet not cured. They can be medically diagnosed and distinguished from psychologically based illness. The most frequently occurring forms of mental illness are schizophrenia, affective disorders (depression), and anxiety.

Research indicates that proper outpatient care will often prevent the need for hospitalization. Encouraging outpatient care with coverage on a parity with other illnesses could reduce the total cost to the insurance company.

A. The current benefit structure of the Medical Care Plan is modeled after the AT&T medical benefit structures. In addition, the medical plan, along with the many other benefit programs provided by Sandia, is continually evaluated to remain competitive both locally and nationally. A 1986 Hewitt Associates survey report on "Company Practices in Mental Health Coverage" indicates that 93 percent of the surveyed companies cover mental health care under their medical plans, but with limits on the benefits provided. In fact, a majority of these companies report specific limits for both inpatient and outpatient treatment of mental illness.

It is a common benefit practice to design dollar limits per plan year and per visit, as well as limits on number of annual visits, for outpatient mental illness treatment. Outpatient psychiatric benefits under the Medical Care Plan are payable at 50 percent of the Reasonable and Customary charge, limited to \$30 per visit and \$1500 per covered person per calendar year. Therefore, this provision effectively covers 50 visits per year.

The Medical Care Plan is a comprehensive health plan designed to protect plan participants from major financial problems associated with medical expenses. This is one of the reasons that more coverage is provided for costly inpatient mental illness treatment. However, this benefit structure encourages the use of inpatient care almost exclusively, rather than outpatient care. We share your concern about coverage for more effective and cost-efficient outpatient mental illness treatment. Therefore, we are studying the possibility of improving the benefits available for outpatient mental illness treatment while still maintaining some control over the costs of this greatly increasing expense under the Medical Care Plan.

Ralph Bonner - 3500

Q. What is the procedure for filing health care claims when both husband and wife (no children) work at Sandia? Possible choices: (1) File the claim under the husband's name (as the employee) and the

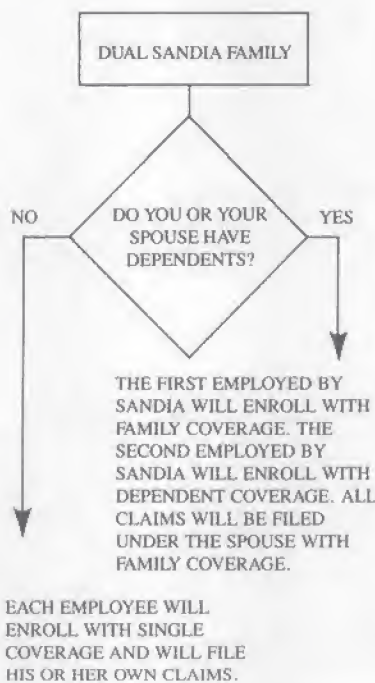
wife as the dependent (even though she is a Sandia employee) - \$300 deductible, or (2) Husband and wife each file separate claims for their own medical costs - \$100 deductible.

A. Either procedure is a reasonable method for enrolling in the Medical Care Plan and for filing medical care claims. The general rule that Employee Benefits follows when enrolling "dual Sandia" employees into the Medical Care Plan is shown in the chart below.

The Medical deductible for each covered person is \$100 per calendar year regardless of the type of coverage (single, family, or dependent). The family deductible of \$300 per calendar year comes into play only when three members of the family unit have individually met the \$100 deductible or when the sum of all the individual deductibles for family members equals \$300. This provision is designed to minimize the out-of-pocket expenses for larger families.

In the situation where you once had a dependent (family member other than yourself) but no longer do, and you are carried as a dependent of your working Sandia-employed spouse, both procedures will yield identical results. Both you and your spouse are subject to the \$100 deductible whether you each have single coverage or have family/dependent coverage.

Ralph Bonner - 3500



Q. I have always used my first initial, middle name, and last name (rather than the more-traditional first name, middle initial, and last name format). But my Sandia badge and the Sandia locator persist in using the traditional format. This causes a problem when professional colleagues call the locator to get my phone number. They ask for me by the name I go by (a diminutive of my middle name), and are told that I don't exist.

A. The personnel data base (more precisely, the Human Resource Information System) is the official list of all Sandia employees. Only legitimate changes to the data base can be made.

We find your request to change the way your name is listed to be reasonable. Send a one-line memo to your Personnel Representative stating the name you are currently listed under and the new name (John C. Doe and J. Carl Doe are equally acceptable). Changing your name in the HRIS will change it in the alphabetical section of the phone directory (used by the locator), on your paycheck, on official corporate mailings — in fact, everywhere EXCEPT:

1. Changes to your badge must be made through Security and are based on the name used to grant your clearance (if your clearance showed John Carl Doe, you can change your badge to J. Carl Doe or John C. Doe, but if it showed only John C. Doe, you cannot change it now to J. Carl). The Badge Office can tell you whether the change is acceptable.

2. Names in the organizational section of the phone book are controlled by your department manager or director. Some organizations list employees by initials only, some by first name and middle initial, etc.

3. Name changes on US Savings Bonds must be made at Payroll.

Herbert Pitts - 3100

Q. Why do we have two different phone numbers for Fire and Emergency? Isn't a fire an emergency? And why is it that neither number resembles the nationally used single number, 911?

If we must have two numbers, what's wrong with 911F (for fire) and 911M (for medical)?

A. We don't disagree with your logic. However, we are faced with the choice of changing a proven system (the current one) to another that, although more commonly known outside Sandia, may or may not improve our on-base emergency response. Given the difficulty in changing to 911 (with some portion of the difficulty being technical constraints to the existing phone system — dialing a 9 gives us an outside line, for example), we have chosen to stay with the dual number system. We acknowledge subscribing to the theory: "If it ain't broke, don't fix it."

Jim Martin - 3400

How About One That Looks Like the Gas Bill?



Dog chew-toys from Wackabuck Industries, including one shaped like an IRS agent, are dubbed "Tasty Tyrants."

Lynn Asinof, Wall Street Journal



ANSWER to question on Page Seven: It's the Texas town of Sandia, north of Corpus Christi. "Three houses, a community center, and a gas station," says photographer Art Arenholz (3730).

MILEPOSTS

LAB NEWS

JUNE 1988



Gene Harling (7100) 30



Bob Eldredge (3412) 25



Julian Lovato (2853) 25



Dennis Adkins (9213) 30



Vera Chandler (8273) 25



Frank Keene (7000) 35



Ken Cole (1551) 30



Al Mederios (8161) 25



John Freie (8144) 25



Ken Payne (5123) 30



Frank Perry (1263) 20



Joe Abbott (2135) 30



Don Goodrich (7137) 20



Jay Chamberlin (6221) 25



John Bahlman (7523) 35



David Sanchez (2851) 25



Rupert Byers (6418) 25

Deadline: Friday noon before week of publication unless changed by holiday. Mail to Div. 3162.

- Ad Rules**
1. Limit 20 words, including last name and home phone.
 2. Include organization and full name with each ad submission.
 3. Submit each ad in writing. No phone-ins.
 4. Use 8 1/2 by 11-inch paper.
 5. Use separate sheet for each ad category.
 6. Type or print ads legibly; use only accepted abbreviations.
 7. One ad per category per issue.
 8. No more than two insertions of same ad.
 9. No "For Rent" ads except for employees on temporary assignment.
 10. No commercial ads.
 11. For active and retired Sandians and DOE employees.
 12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

TOOLS, tire chains, jacks, all prices negotiable. Krahnig, 268-8126.

TRAVEL TRAILER, 1992 Alumalite, 27', AC, awning, stabilizer jacks, 30-lb. gas bottles, extras. Meyer, 296-9066.

HUNTING DOG PUPPIES, 6 weeks old, first shots, tails & dewclaws cut, to night homes only, \$50/ea. Robinson, 865-7787.

MALE ROTTWEILER, 17 months old, \$300; 100-ft. fence, 6' high, \$300. Smith, 262-2440.

HOLLEY CARBURETORS, \$50/ea. OBO, electric trailer brake, \$25 OBO. Mozley, 884-3453.

TENT TRAILER, 1978 Starcraft Galaxy, sleeps 6, extra storage, icebox, stove, heater, \$2400. Lokouta, 294-7353.

KING-SIZE WATER BED, bookcase headboard, baffle mattress, heater, padded rails, solid-wood mirrored dresser, end tables, \$500. Damrau, 883-8592.

OAK DESK, \$475; Mitsubishi VCR, \$200; double bed w/sheets, \$95; file cabinet, \$40; Apple ImageWriter II printer, \$350. Sinnert, 266-9536.

SHEPHERD/DOBERMAN-CROSS PUPPIES, 6 weeks old, free to good homes. Padilla, 873-0271 or 877-8747.

3M FAX MACHINE, \$250; Tektronix 6002 processor lab w/disk drive, \$150. McCroy, 296-1321.

LAWN MOWER, 4-hp Briggs & Stratton, rear bagger, \$50. Fleming, 881-2223.

LUMBER, approx. 1/2 pickup load, some scrap, you haul, \$15. Barth, 294-3357.

S&W NLB, model 657, \$300; S&W NLB, model 34, \$255. Greene, 299-4163.

WOODEN CLOSET DOUBLE DOORS, 2 sets, 48" w/alt hardware, \$25/ea. Trellue, 292-7369.

PTO WINCH, includes all brackets, linkage, transfer case adaptor, and bumper for '67-'77 Bronco, \$500. Reil, 299-2665.

BUCKSKIN MARE, half Arabian, for experienced rider, English and Western show experience, competitive trail, 8 years old, 14.2 hands. Hanscho, 281-5623.

PIANO, Knabe parlor grand, \$2200. Thomas, 268-1532.

BACKPACKING TENT, Four Seasons North Face, w/aluminum poles, A-frame, rain fly, recently seam-sealed, \$75. Russell, 298-0162.

THREE TIRES, 6.50x13, \$20; music boxes, some Swiss-movement. Hamblett, 298-6052.

OLIVETTI COMPUTER PRINTER, \$100; Hitachi reel-to-reel tape deck, \$75. Conrad, 299-5316.

IBM PC JR. COMPUTER, w/printer, color monitor, keyboard, games and manuals, \$675 OBO. Thunberg, 291-0291.

KITTENS and year-old cats, long- and short-haired, Persian/Siamese, calico, black, mixed, male and female, free. Babo, 293-0736.

KITCHEN CABINETS, built-in appliances, make offer. Volk, 299-1702.

BOAT UTILITY TRAILER, 20', 18,000-lb.-rated axle. Ross, 821-6386.

QUEEN-SIZE BRASS HEADBOARD & FOOTBOARD, w/frame, \$140. Tripp, 822-8580.

TENOR SAXOPHONE, Classic 1961 Mark VI, cost \$1800, sell for \$1000. Humphreys, 292-5512.

PORTABLE PLAYPEN, w/carrying case. Duval, 299-1848 leave message.

RUNNING BOARDS to fit Isuzu Trooper II, make offer. Pletta, 281-4277.

POLISHING/GRINDING ARBOR, heavy-duty, 1" shaft, 1/3-hp motor, cloth, wire, Cratex, and grinding wheels, \$50. Rainhart, 821-3690.

OLYMPUS LENSES: 75-200mm f1.45 macro telephoto; 25-500mm f1.4 wide-angle; 50mm f1.6 cases, flash. Neidel, 298-4369.

APPLE II+ COMPUTER, 64K RAM, Super Serial card, game paddles, \$250; ImageWriter printer, \$150; \$375/both. Greulich, 281-5424.

CELLO, w/suit case and bow, \$400; 5' built-in bathtub, white, \$15. Anderson, 294-5451.

ROOFTOP LUGGAGE RACK for VW bus, 56" x 49" tubular metal, \$65; Hoover floor scrubber, twin heads, extra polishing brushes, \$24. Reid, 268-6506.

LOVESEAT, orange print, \$85; telephone chair, hardwood, \$25; golf cart, Ajay 1100, \$10; steel casement window, fits R/O 71-112" x 27-1/2", \$20. Trump, 299-5162.

WATER HEATER, 52-gal., electric, 9-yr. warranty, \$80. Chavez, 865-6036 evenings.

ANTIQUE HALL MIRROR, \$50; brass chandelier, \$50; oak bar stools, \$25/pr; light-green accessories. Kallio, 296-4516.

APPLE II+ COMPUTER, w/added 16K RAM, B&W monitor, external drive, Epson printers (MX80, DX-10), 2 Olivetti tapes, SmartTerm II, Bank ST Writer, more, \$590 OBO. Garner, 292-3859.

WURLITZER ORGAN, w/earphone plug-in cassette; Leslie speaker; wrought-iron table w/4 chairs, misc. items. Tyler, 294-2310.

PICKUP ACCESSORIES: vented chrome headcase rack, lighted running boards, lockable tool box. Flanagan, 884-5054.

AKC POMERANIAN PUPPIES, ready July 12, \$200. Montano, 891-0921.

FIVE STEEL CASEMENT WINDOWS, various sizes, \$30/all. Arning, 256-9229.

FORMAL DINING SET, teak, w/6 chairs, \$150; 2 reclining armchairs, \$150; his & her armchairs, \$75. Tibbets, 293-2856.

KRACO AM/FM CASSETTE for auto, \$35; 2 Pioneer 4" speakers, \$10; 2 Ford 5" x 7" speakers, \$15. Barr, 821-5870.

WINDOW AIR CONDITIONER, refrigerated, 15,000 Btu, \$60. Fleming, 296-8439.

HOUSEHOLD GOODS, infant items, toys, moving sale, 8 a.m.-5 p.m. June 17, 8 a.m.-12 noon June 18, 9312 Galaxia Way NE (near Spain & Moon). Goldstein, 821-9531.

GARAGE SALE, 8-family, June 18, 8 a.m.-3 p.m., 6012 Hannett NE, southeast of Indian School & I-40, no early sales. Bunker, 299-5335.

BADGER JUMBO BASSINET, skirt & liner, used 3 months, \$60. Barnette, 292-5186.

RCA COLOR TV, 19", \$200; electric typewriter, \$175; king-size water bed, \$150; exercise bike, \$20; desk, \$15; OBO. Walsh, 298-4887.

SIX MATCHED KITCHEN CHAIRS, light finish, \$120. Smith, 299-6873.

PING-PONG TABLE, you haul, \$30. Hawley, 299-2516.

BBY CARRIER, rocking type, \$20; baby carrier, plain, \$5; wind-up baby swing, \$10. Brigham, 293-6914.

SLEEPER SOFA, earth tones, oak trim, \$150; unused wedding dress, \$100; metal desk, \$30; 2 black/brass lamps, \$60. Herndon, 294-2678.

AKC-REGISTERED BEAGLE PUPPIES, ready now, red & white or tricolor, \$175. Hass, 299-3506.

SERVICE MANUAL for '84 Nissan 300ZX, \$15. Pao, 822-9056.

SLEEPING BAGS: Ecco burglar-alarm system, new in box; alghans, large sizes, new, \$45-\$60. Tennant, 294-1347.

8' CAMPER w/jacks, sleeps 2, stove, icebox, 20-gal. water, 110-V ready, \$1000 OBO. Aragon, 265-9109.

FREE FIREWOOD, mostly cottonwood, small to medium diameter, some uncut, approx. 1/3-cord, you haul. Moreno, 266-8498.

PHOTOGRAPHIC EQUIPMENT: Super 8 movie camera, \$20; light, \$10; projector, \$40; screen, \$15; editor, \$20; Retina IILC, \$25. Walkington, 842-1938.

MISSION OAK DESK, rare "C" shape, 46" L x 20" W, front bookshelves, \$375. Dalphin, 265-4029.

COUCH AND LOVE SEAT, neutral colors, \$225. Eady, 298-5997.

ALUMINUM SCREEN DOOR, 36" x 12" hamster cage. Maestas, 831-4072 after 4.

WINDSURFER, Mistral Tarifa, includes all accessories. Volk, 256-9214.

KNITTING KNITTING MACHINE, ribber, wistand, 1 year old, cost \$1350, asking \$1000. Boisjars, 265-8299.

RIML ELECTRIC PIANO, \$250; EMI 101 synthesizer, \$300; RC-10 radio-controlled car, \$110. Hubbard, 281-1779.

ONE-WAY AIRLINE TICKET, Continental, from Albuquerque to Milwaukee via Denver, a.m. on July 3, \$50 OBO. Koepf, 294-7136.

TWO GOODYEAR EAGLE M + S TIRES, P205/70R14, 1000: 5000-Btu air conditioner, \$75; walkie-talkies, 3-channel, \$50/pr. Parson, 291-8394.

DINETTE TABLE, 42" round w/Formica

top, w/4 chairs, chains need reupholstering, \$75. Barnard, 831-4114.

OSCILLOSCOPES, Tektronix 531, 535, dual trace. Mayer, 294-3368.

PACKING CARTONS, set of 9, 3 cu. ft., \$10. McCall, 266-4483.

CHILD'S BIKE SEAT, Sears, complete, \$8. Drotning, 294-4907.

TRAILER, 4' x 8' x 4', 2" hitch, heavy springs, carries full cord of wood, \$260. Talbert, 298-9036.

LAWN MOWER, Sears Deluxe reel-type, recently overhauled, \$135; rotary mower, \$35. Lenander, 256-0777.

PORTABLE BARBECUE, \$33; stadium seat, \$2.50; cooler, motor, 2-sp., 1/4-hp, \$14; child's folding guard gate, \$2.50; antique chair, \$5. Cole, 298-1464.

TWIN-SIZE BED, complete, \$50. Baker, 888-0792 leave message.

JERRY CANS, \$5; stainless-steel wire boxes, \$1; Hoover vacuum cleaner, \$10; GE portable oven, 100; bird cage, Mills, 299-2130.

HOT-AIR BALLOON, 84' Raven S55-A, w/classic basket, double-burner system, extras, \$6200. Cook, 869-6921.

LINED DRAPERIES, gold, 123" x 85", w/glass curtains, \$85; mirror, 30" x 40", beveled edges, \$39. Allen, 298-9833.

PPALZGRAF CHIP-AND-DIP SERVING DISH, V-plastic pattern, new in box, \$20. Spears, 266-9782.

PLAYGROUND SAND, 3 cu. yds., you pick up, 1/3 help shovel, \$10. Creel, 294-1650.

REMOTE-CONTROL ITEMS: Robbe PT-109 boat, complete kit, Tamaya Frog car, 3-metre glider; Gorham competitor helicopter, w/radio & gyro; Reese load-leveler hitch; new Tyco slot-car set. Jensen, 821-6178.

BLACK & DECKER ELECTRIC LAWN MOWER, used 6 times, \$85. Baldonado, 242-9225.

WHITE RABBIT COAT, short, \$125; wedding dress, Milady, size 10-12, \$150; mantilla veil, \$50. Malone, 828-3695.

LEUPOLD RIFLE SCOPE, M6, 4x, full-size, blue, \$65. Krenz, 298-0619.

PRECOR 612 ROWING MACHINE, \$100. Lukens, 299-1271.

SEARS CARGO TRAILER, w/plastic clamshell top, 31 cu. ft., 925-lb. capacity, weighs 250 lbs., used once, \$600. Johnson, 298-4553.

SEARS SWING SET: 2 swings, glider, bench swing, slide, \$50; jumping horse, \$10; One-Step car seat, \$10. Spears, 275-0414.

SIAMESE KITTEN, bluepoint male, purebred, 11 weeks old, has initial shots, raised with children, \$60. Randall, 298-2695.

TRANSPORTATION

'57 CORVETTE, white/silver bullet, w/ired interior, 263, AT, removable hardtop, \$16,000. Cerutti, 292-0186.

'84 COUGAR, V-6 Terry, 293-5440.

'78 MERCURY ZEPHYR 5W, 6-cyl., AT, 20K miles on rebuilt engine, new tires and brakes, \$1200. Crawford, 897-3282.

FORD EXP, new brakes, struts, tires, valve job, water pump, and battery. Hickerson, 884-8462.

'81 HONDA CX500D, shaft drive, water-cooled, helmets, manual, cover, original owner, \$850. Zirzow, 294-7296.

'84 KAWASAKI GP250, Korker header, tinted windshield, 3.5K miles, shop manual, \$1350 OBO. Barnard, 831-4114.

'80 SUZUKI GS450S, 15K miles, w/cover, helmets, more, \$650. Lamppa, 299-1119.

'46 DODGE TRUCK, \$1395, '90 Suzuki GS1100L motorcycle, \$1295. McCroy, 292-1321.

YAMAHA SH50T RIVA MOTOR SCOOTER, new, \$560. Suzuki moped, \$100. Jones, 293-0440.

'76 LINCOLN CONTINENTAL MARK IV, 76K miles, uses regular gas, \$2150; '75 Datsun 8210, 74K miles, 32-mpg, 2-dr., 4-sp., new Michelin tires, radio/ tape, \$1250. Kerschman, 281-1671.

3-SPD. WOMAN'S RALEIGH BIKE, w/old-up side baskets, head and tail lights, \$50. Trellue, 292-7369.

FORD RANGER, V-6, 4-sp., \$4900 OBO. Jordan, 256-7000.

'79 CORVETTE L-82, T-top, brown, AT, AC, PW, AM/FM cassette, 56K miles, new tires, \$7900. Rivera, 823-2180.

'80 NEVILLIE, 4-dr., original owner, \$1000. Burchett, 294-8592.

'82 HONDA, 16', Canumba sails, \$2000. Peggert, 281-1414.

'65 VW BUG, \$500. Hamblett, 298-6052.

'75 DATSUN 280Z, parting out, rebuilt engine and transmission (20K miles on rebuilds), will low for you, \$375 OBO. Thunberg, 291-0291.

'85 CORVETTE, fully loaded, red, 50K miles, bids accepted through June 30, we reserve the right to refuse all bids subject to final sale. Sandia Lab Federal Credit Union, 293-0500.

'73 DODGE STEP-SIDE PICKUP, V-8,

4-sp., \$1895. Armijo, 836-3510.

'18 FIBERGLASS BOAT, w/convertible top, 90-hp electric start motor, trailer, \$2695; '74 Lincoln Mark IV, 460 engine, \$1000; '85 Kawasaki Eliminator, 908cc, water-cooled, shaft drive, \$2300. Dickeman, 892-9561.

'76 COUGAR, 62K miles, AC, PS, PB, AT, leather interior, new radial tires, records available, \$2500, offers considered. Greulich, 281-5424.

'79 MOBILE TRAVELER MMH, 19', Dodge V-8, sleeps 4-5, extras. Sharp, 243-1498 after June 19.

'76 CAPRICE, 2-dr., AC, PS, PW, power seat, cruise, 454 engine, new tires, \$1100. Arning, 256-9229.

'83 DODGE CONVERSION VAN, 3/4-ton, PS, PB, cruise, AC, brown/gold, \$5800. Ramel, 821-0475.

NACRA 5.2 CATAMARAN, 2 sets of sails, \$3200 OBO. Schafer, 883-5951.

'80 BUICK SKYLARK, 2.8 litres, power, cruise, stereo, vinyl top, free water bed w/purchase, Pitts, 266-4402.

'81 SUZUKI GS650E, Vance and Hines headers, Dunlop Sport Elites, low bars, \$600. Lits, 884-9010.

BASS TRACKER II BOAT, 16', depth flasher, fish-finder graph, 40-hp Mercury, electric trolling motor, \$2400. Stewart, 265-8927.

FISHING BOAT & TRAILER, 15' fiberglass, 4 seats, V-hull, 40-hp Johnson motor, \$1400. Pierce, 268-2122.

ODAY DAYSAILER, 17',uddy cabin, main and jib, hiking straps, trailer, 7 1/2-hp Honda outboard motor. Melvin, 298-6402.

'82 OLDS TORONADO BROUGHAM, white w/ired interior, new engine and tires, \$5500. Guillerrez, 821-4852 after 5.

'83 BUICK CENTURY LTD., one owner, 42K miles, 2-dr., V-6, AT, AC, loaded, \$4895. Clevenger, 888-0201.

'78 CHEV VAN, stereo, 5-sp., AT, PB, PS, tilt, AM/FM stereo cassette, 75K miles, bids accepted through June 30, we reserve the right to reject all bids subject to final sale. Sandia Lab Federal Credit Union, 293-0500.

'13' BOY'S BIKE, Maestas, 831-4072 after 4.

'78 BMW 320i, AT, cassette, \$4000 or make offer. Renken, 296-9713.

MAN'S 10-SPD. BIKE, Centurion, w/headlight and generator. Bailey, 294-4218.

'84 MERCURY LYNX, 3-dr., 53.5K miles, new carburetor, dash cover, one owner, \$500 below NADA, \$3000 firm. Landron, 291-9974.

'87 FORD F250 RANGER, custom cab, camper special, 352 CID, AT, \$1800. Ashcraft, 281-5993.

'79 YAMAHA IT 175 DIRT BIKE, extra parts, \$300. Hubbard, 281-1779.

'83 TOYOTA CELICA GT, hatchback, PS, PB, AC, AM/FM cassette, 5-sp., cruise, 45K miles, \$5500. Tucker, 292-8954.

'79 DATSUN 210 SW, 86K miles, new tires, \$1500 OBO. Leyba, 885-6195.

'82 FORD THUNDERBIRD TOWN LANDAU, 67.5K miles, 3.8 V-6, all power options, garaged, one owner, \$3875. Spence, 266-3002.

'75 VW BUS, consider trade for anything of same value or \$1500. Lante, 869-2958.

'77 KAWASAKI KZ 400, 28K miles, \$250. Talbert, 298-9036.

'68 VOLVO, 4-dr., sound system, new tires, \$900. Homer, 836-5043.

'80 VW RABBIT, 4-dr., 4-sp., 74K miles, one owner, \$1300. Anderson, 292-9215.

'77 JEEP CHEROKEE, Quadracra, 360 V-8 engine, \$2000. Schnetzer, 292-0733.

'85 DOLPHIN MMH, roof and dash AC, stereo cassette, CB, 15K miles, \$14,900. Russell, 298-4949.

'84 VOLVO 5W, turbo, AT, OD, AC. Walter, 884-4282.

'79 OLDS CUTLASS SUPREME, loaded, 78K miles, \$2000 or make offer. Paterson, 836-0140.

'73 DIAMOND MMH, 22', Dodge chassis, roof and dash AC, awning, generator, shown by appointment. Hinds, 296-5824.

'77 JEEP CHEROKEE, wide-track, 4x4, 2-dr., AC, locking hubs, AT, wide tires w/white spokes, \$1900. Morrow, 281-9607.

'81 CHEV K5 BLAZER, 4x4, \$4200 OBO; 16' Sol Kat catamaran, \$1650 OBO. Gallegos, 898-1839.

'84 RAMBLER AMBASSADOR CLASSIC, one owner, 45K miles, make offer. Furaus, 293-9799.

'72 HONDA 600Z COUPE, green, \$595. Mogford, 899-1416.

'66 PORSCH 912, 5-sp., rebuilt 2.0-litre engine, \$5700 OBO. Randall, 298-2695.

REAL ESTATE

2-STORY ADOBE STUDIO, 7/10 acre, storage, 2 years old, partly landscaped, South 14, Torreon, \$39,900. Zamora, 897-3792.

2-BDR. MOBILE HOME, 12' x 65', covered porch, carport, garden, new AC, in adult park, \$9900. Rosenberg, 299-9628 or 296-1346.

2-18 ACRES, Los Lunas, mountain views, buyer needs to find own financing, \$36,000. Zirzow, 294-7296.

4-BDR. HOUSE, 2-3/4 baths, studio, 1900 sq. ft., Academy Plaza. Gallegos, 298-8944.

3-BDR. HOME, in foothills, 1-3/4 baths, 2-car garage, city views, FP, wet bar, new roof, more, can be sold furnished, \$82,000. Ater, 822-9697 or 292-3467 evenings.

2-BDR. HOME, 1/2 acre, Sierra Vista (Cedar Crest), hobby room, solar green-house, glazed tile, hardwood floors, views, \$86,000. Smith, 281-1317.

1-BDR. CONDO, midtown location, all amenities, FHA assumable, low CTL, \$35,000. Gosselin, 884-0542.

3-BDR. HOME, 1 bath, 3/4 acre, 4 miles south of Los Lunas, new well, roof, and paint, \$55,000. Wolfe, 865-6106.

3-BDR. HOME, 1-3/4 baths, studio, FP, 2-car garage, 1475 sq. ft., sprinklers, mountain and city views, 1300 Jewett NE, \$79,900. Russell, 298-0162.

3-BDR. HOME, Sandia Heights, 1750 sq. ft., 2 baths, raised ceiling, adobe accents, skylights, mountain views, \$127,500. Herndon, 294-2678.

3-BDR. MOBILE HOME, house-type construction, 28' x 50', adult section Four Hills Mobile Home Park, covered patio. Tennant, 294-1347.

4-BDR. HOUSE, 1829 Illinois NE, den, LR/DR combo, single garage, storage building, hardwood floors, REC possible, \$83,000. Frye, 255-8364.

2-BDR. MOBILE HOME, 1985 model, 14' x 50', all appliances, book value \$10,000, \$7500 cash or refinance. Habibi, 293-7216.

HOUSE at 1300 Willmoore SE, \$2000 down, fully assumable, \$52,000. Hubbard, 281-1779.

4-BDR. HOME, Monterey Manor, near Lomas & Juan Tabo, 2200 sq. ft., 1-3/4 and 1/2 baths, new furnace and carpet, yard sprinklers. Copp, 265-6196.

4-BDR. HOME, 1/2-acre lot, 3400 sq. ft. heated, 5200 sq. ft. total, 3-3/4 baths, tile roof, landscaped, \$185,000. Aragon, 294-4275.

4-BDR. HOME, New Holiday Park, 1990 sq. ft., city & mountain views, LR, DR, den w/FP, ceiling fans, skylight, 8% VA, \$106,900. Bollig, 294-8077.

3-BDR. HOME, near Tramway & Indian School Rd., 1-3/4 baths, 1600 sq. ft., landscaping, 9/12% FHA w/no qualifying, \$17,000 equity, \$95,500. Richter, 294-5147.

4-BDR. HOME, Academy Hills, FR, DR, LR, party in kitchen, 2 baths, new carpets, landscaped, sprinklers. Klavetter, 8201-0513.

3-BDR. HOME, east of Tramway near Lomas, 1-3/4 baths, great room, thermal windows, flat trees, views, \$75,900. Andraka, 294-2618.

3-BDR. TOWNHOUSE, Old Town area, 2-1/2 baths, FR, DW, microwaves/range, deck, 1643 sq. ft., 18' x 16' MB, \$92,500. Malone, 828-3696.

4-BDR. HOME, 6604 Leander NE, 2197 sq. ft., 2-1/2 baths, new kitchen cabinets, landscaped, sprinklers, \$112,000. Wayne, 821-3484.

COUNTRY HOME, w/separate guest quarters, in Cedar Crest, year-around road access, \$107,000. Carson, 281-5115.

WANTED

14' WHEEL for '85 Chev. Celebrity Camrio, 292-7263.

BICYCLE HELMET, size 7. Trellue, 292-7369.

RESPONSIBLE PERSON to share townhouse, 2-bdr., 2 baths, security system, \$300/mo., \$100/deposit. Hesch, 265-5320.

DINETTE TABLE. Brigham, 293-6914.

AQUARIUM, 100-gal or larger, leaks or cracks OK. Shurtieff, 296-7870.

CHEV CITATION BODY, '81-'83, or will sell good engine and transaxle. Key, 292-5770.

BABYSITTER needed for "Living Single" singles group, group and individual care, evenings. Lambert, 294-4188 leave message.

WORK WANTED

MOWING, TRIMMING, watering jobs, by responsible teenager, near Juan Tabo and Indian School Rd. Intersection, can provide mower. Perrine, 293-1429.

HOUSE PAINTING, by experienced college senior, inside and outside, references available. Dickey, 275-0980.

SHARE-A-RIDE

VANPOOL RIDERS WANTED, along N14 and Frost Rd., \$34/mo., ride every day. Rentzsch, 281-5017, or Burns, 281-3922.

Plan for a Perfect Pop's Day: Proceed to the Pool

POPULAR POPPAS CAN PADDLE in the pool — or eat barbecue — or just relax under a shade tree this Sunday (June 19). After all, it is their big day of the year. Father's Day festivities and feasting (11:30 a.m.-5 p.m.) promise to be better than ever, with an outstanding spread served on the patio: BBQ ribs and sandwiches, burgers, hot dogs, and all the fixings. Combine the fantastic food with music from Sonny & Company (1-5 p.m.), a game of volleyball or horseshoes, and a cool dip. Result: a long-remembered good time. Admission is free with a pool/patio pass, \$1.50 for members without a pass (bring the card), and \$2.50 for guests accompanied by members.

SADDLE UP OLD PAINT tonight and head for El Rancho Coronado for another night of western whoopee. Headliners at the two-for-one chow line are fried shrimp and filet mignon; afterward, shuffle around on the hardwood to the ditties of those one-and-only Isleta Poor Boys. Dinner reservations requested (265-6791) — and bring along the membership card; it gets you a food-price discount.

SPEAKING OF WESTERN WHOPEE, another Western Night's on tap next Thursday (June 23). Start out with c/w lessons (6-7 p.m.), then join the rest of the stompers from 7 to 10; music by Trio Grande. Free munchies and special drink prices all evening. This one is also billed as Strohs night; now what in the world could that mean?

T-BIRD CARD PLAYERS close out the month on June 30 with another wheel/deal session, starting at 10 a.m. We understand this enterprising group is really serious about another raid on Tinsel Town (Las Vegas, for the uninitiated — and we don't mean N. Mex.). Come on out to learn some fancy beat-the-dealer tricks; just don't tell Head Dealer Jim McCutcheon that we sent you!

THE SADDLELITES SWING into orbit with your favorite western tunes (8 p.m.-midnight) next

Friday evening, June 24. Start out with prime rib or snow crab at the two-for-one dinner special. And — since it's Hat Night — wearing your favorite ten-gallon will get you a free drink.

BALLROOM BINGO is the name of the game on Thursday, June 30. Card sales start at 5:30 p.m., and early-birds get off to a fast start with the first game at 6:45 p.m. Kick the kitchen chores right out the window, because a variety of soups and sandwiches are available at reasonable cost. Substantial cash prizes possible, plus some very special door prizes. Here's an evening the whole family will enjoy!

YOU CAME A LONG WAY FROM ST. LOUIS, and you still have a long way to go — especially with all the trip opportunities served up by the C-Club Travel Committee. Here's a sampling:

Northern N. Mex./Southern Colo. (July 14-17) — Prices ranging from \$334 (double/one bed) to \$408 (single) cover three nights' lodging, RT charter bus, a couple of very special meals, a melodrama, and more. Sights include Chaco Canyon, Chama, Mesa Verde, and Durango (and a trip on the narrow-gauge between Durango and Silverton). Reserve space by calling Ann Mitchell at Zia Travel Services (266-1787).

Canadian Rockies (Aug. 27-Sept. 4) — The \$876/person (double) tab covers RT air fare to Calgary, motor coach ground transportation through the Rockies, eight nights' lodging, boat cruises, a snow coach tour, some meals, baggage handling, and more. Deposit \$300/person when you sign up; final payment's not due until July 27.

Rollin' on the River (Aug. 8-15) — There's still a chance to climb aboard this one (leader John Shunny, ret., is working on a second boatload). Trip length is shortened somewhat (to eight days), but you'll still cover the 280 Colorado River miles from Lee's Ferry to Lake Mead. The reduced price of \$750 includes all meals on the river trip and bus transportation back to Lee's Ferry. Give John a call on 265-1620 for more info or to reserve your space.

Take Note

Swedish colonists designed and built the first log cabin (symbol of the American pioneering spirit) when they came to America. Zippers, cream separators, implantable pacemakers, safety matches, and adjustable wrenches were ideas of Swedish origin. This information and much more about Swedish influence in America can be found at "Sweden and America: A History Celebrated," a traveling exhibit now at Winrock Shopping Center until June 27 featuring photos and information about Swedish-American history beginning with the "New Sweden" colony founded in Delaware 350 years ago. Craig Olson (1241), vice-president and program chairman of the Scandinavian Club of Albuquerque, helped bring the exhibit to Albuquerque. For more information, contact Craig on 4-2355.

After Little League season ends and your kids are underfoot telling you there's nothing to do, treat them to a cultural experience at the Indian Pueblo Cultural Center. The Center helps elementary- and mid-school-age children learn about Pueblo Indian culture through its annual children's program of integrated arts and crafts showing how to prepare for a feast day. Sessions on dancing, clothing design and construction, ceramics, jewelry-making, cooking, and language training will be presented by Tony and Cathy Purley of Laguna Pueblo. The program runs Aug. 2-5 for children ages 6-9 and Aug. 9-12 for ages 10-13. Daily sessions are from 9 a.m. to noon at the Center. Cost is \$25 to pay for materials. For more information and to register, contact Georgia Garcia on 843-7270.

The LAB NEWS list of nominees for the Federal Laboratory Consortium's technology transfer awards (May 20, 1988) named Bob Reuter (1522) for wind turbine dynamic analysis. We've since learned from Technology Transfer Div. 4031 that Don Lobitz (1522) should have been listed for the wind turbine work. (Bob Reuter was involved in some early dynamic analysis work, but Don has carried the ball since.)

Jack Mortley (7521) was named director of the Scientific Instrumentation and Research Division of the Instrument Society of America.



ON BEHALF OF SANDIA, Dennis Roth (VP 3000, center) accepts a "thank-you" award from Pat Simmons (right), executive director of Big Brothers/Big Sisters of Albuquerque. Don Devoti (3510), who's been president of the BB/BS Board since April 1987, looks on. The award was in appreciation for continuing support from the Labs through United Way, and the outstanding participation record of Sandia employees in the BB/BS program.

April Earnings Factors

	Earnings Factors
Savings Plan for Salaried Employees (SPSE)	
AT&T Shares	.9820
Government Obligations	1.0024
Equity Portfolio	1.0098
Guaranteed Interest Fund	1.0069
South Africa Restricted Fund	1.0055
Diversified Telephone Portfolio	
Unrealized Appreciation	.9986
Realized Appreciation	.0067*
Savings and Security Plan — Non-Salaried Employees (SSP)	
AT&T Shares	.9816
Guaranteed Interest Fund	1.0070
South Africa Restricted Fund	1.0053
Diversified Telephone Portfolio	
Unrealized Appreciation	.9985
Realized Appreciation	.0067*

* The J has been removed from the earnings factor. Current month's DTP earnings may be calculated directly: Earnings Factor x DTP Current Worth = Current Month's Earnings.

Welcome

- Albuquerque**
 - Carmen Allen (2614)
 - Lisa Allred (3718)
 - Darrell Filkins (121)
 - Corina Gallegos (21-1)
 - Mary Hopkins (22-2)
 - Anna Nusbaum (121)
 - Anita Pickett (22-2)
 - Michelle Silva (22-2)
 - Timothy Urmeda (2814)
- Arizona**
 - Daniel Christoffersen (5245)
 - Juan Rebeil (5249)
 - Huong Tran (1265)
- California**
 - Gordon Chandler (1263)
- Florida**
 - Dorothea Odom (22-2)
- New Mexico**
 - Tracy Dunham (1821)
 - Linda Parchman (21-1)
 - Patricia Standing (22-2)
- Pennsylvania**
 - David Beightol (7542)
 - Patrick Musinski (2858)
- Texas**
 - James Romig (6448)
- Utah**
 - John Naegle (2647)